



This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

### Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

- + *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.
- + *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.
- + *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.
- + *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

### About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at <http://books.google.com/>



44. 1082.









**SAILING DIRECTIONS**  
**FOR THE**  
**ENGLISH CHANNEL**  
**AND**  
**COAST OF FRANCE;**  
**WITH AN ACCURATE DESCRIPTION OF THE**  
**COASTS OF ENGLAND, SOUTH OF IRELAND,**  
**AND**  
**CHANNEL ISLANDS.**  
**COMPILED FROM**  
**TRIGONOMETRICAL SURVEYS & ORIGINAL DOCUMENTS.**  
**TO WHICH ARE ADDED, DETAILED ACCOUNTS OF ALL THE**  
**LIGHTS, SHOALS, BANKS, ROCKS, &c.,**  
**TO THE PRESENT TIME.**

---

**BY JOHN AND ALEXANDER WALKER.**

---

**LONDON:**  
**WM. H. ALLEN & CO., 7, LEADENHALL-STREET.**  
**LIVERPOOL:**  
**J. & A. WALKER, 72, SOUTH CASTLE-STREET.**  
**1844.**





LIVERPOOL:  
PRINTED BY BENJ. SMITH,  
SOUTH CASTLE-STREET.

# CONTENTS.

## SECTION I.

PORT OF LONDON, AND DIRECTIONS FOR THE RIVER THAMES TO THE NORE....	PAGE 8
---	-----------

## SECTION II.

FROM THE NORE TO MARGATE ROADS .....	9
Five Fathom, Horse Channel, &c.....	12
Oaze Channel .....	14
Prince's Channel.....	15
Nob .....	17
Queen's Channel.....	18

## SECTION III.

MARGATE ROADS TO THE SOUTH FORELAND, INCLUDING THE DOWNS.....	19
Small Downs, Ramsgate.....	22

## SECTION IV.

DOVER STRAIT, AND THE COAST FROM THE SOUTH FORELAND TO BEACHY HEAD	27
Dover .....	28
Folkstone, Dungeness .....	29
Rye, Beachy Head.....	30
Shoals between Dungeness and Beachy Head.....	31

## SECTION V.

BEACHY HEAD TO SPITHEAD AND PORTSMOUTH HARBOUR .....	32
Newhaven .....	32
Brighton .....	33
Channel to Spithead .....	37
Inner Channel of the Isle of Wight, through the Needles' Passage, &c., including Southampton Water and Poole Harbour .....	42

## SECTION VI.

FROM ST. ALBAN'S HEAD TO PLYMOUTH .....	47
Bridport, Lyme Regis, Exmouth .....	49
Teignmouth, Torbay .....	50
Brixham, Dartmouth .....	51
Start Point .....	53
Eddystone, Plymouth.....	56

## SECTION VII.

FROM PLYMOUTH TO THE LAND'S-END, AND SCILLY ISLANDS.....	62
Fowey .....	62
Falmouth .....	63
Lizard Point .....	66
Mount's Bay .....	67

44. 1082.





The Lower Pool, from Wappingness to the Regent's Canal, lies E. by N. and W. by S. A little below Hanover Stairs, a shoal runs off as far as Pitcher's Point : by keeping to the north you avoid it. Below Limekiln Dock there is another shoal, extending as far as Limehouse Stairs.

Limehouse Reach lies about S.S.W. and N.N.E. A Rock, on which there is only 4 feet water, lies a little below Limehouse Hole. A Bank stretches nearly one-third across the river from Cuckold's Point. In the middle of the Reach is a Bank that occasionally shifts, the best water near which is on the western side, having 13 or 14 feet. On the Isle of Dogs' side, opposite the Victualling Office, is a hard shelf, stretching nearly one-fourth across the river. Off King's Anchor Wharf a Shoal lies rather close in shore, outside of which is 16 or 17 feet water.

Greenwich Reach lies in a semi-circle from S.E. to E.N.E., about 1 mile. Off Deptford Creek a Shoal begins and runs down almost to the west end of Greenwich, is nearly dry at low water: outside of this Shoal is 13 or 14 feet water. Greenwich upper Shoal lies with Greenwich old church on with a boat-yard, Woolwich church being open to the northward of Greenwich. Off Millington's Wharf, on the north side, close in shore, is another Shoal, to avoid which keep the King's yard clock open to the south of the Isle of Dogs' ferry-house, until Blackwall Reach becomes open. The best anchorage is with the Observatory open to the eastward of Greenwich Hospital in 15 or 16 feet water.

Blackwall Reach lies N. by E.  $\frac{1}{2}$  E. and S. by W.  $\frac{1}{2}$  W. In entering this reach take care to avoid the Shelf which lies off Saunders'ness, by keeping the Storehouse clock in the King's yard at Deptford, open of the Isle of Dogs until you open Blackwall Reach. Give the point a good berth to avoid a Shoal that stretches one-third across the river. There is also some shifting ground above the Folly House, near the middle of the Reach. Off the jetty there is a Shoal with 6 or 7 feet water on it. A flat lies on the west side, opposite the Folly House, to avoid which keep Millington's clock open of Saunders'ness, about this part the tide sets strong across the entrances of the Canal and West India Docks. Near the West India Dock entrance lies the Gun Shoal: care should be taken to avoid this Shoal as it lies some distance from the shore.

Bugsby's Reach lies about S. by E.  $\frac{1}{2}$  E. and N. by W.  $\frac{1}{2}$  W. The whole way between Bow Creek and Hookness a Shoal extends one-third across the river, having only 5 or 6 feet water on it. To clear this Shelf keep the tower on Shooter's hill, called Severndroog Castle, in one with the western White house in Charlton, bearing S.S.E. Charlton Church on with the sluice will lead clear of Charlton Shoal, on which is only 4 or 5 feet water.

Woolwich Reach lies E.S.E. and W.N.W. A Shoal extends from Upper Sand Wharf almost to the upper moorings, about half a cable's length from the shore, and having only 4 or 5 feet water on it. Woolwich Shelf is on the north side of the Reach, about half a cable's length from the shore; it extends from Ham Creek to where Broad-street in Woolwich appears, and has only 3 feet water on it. The mark for this Shelf is a large house in Blackwall open of Hookness; when you bring Broad-street open you are below it.

Gallions Reach lies N.E. by E. and S.W. by W. The upper point of this Reach lying low, should have a good berth. Hauling in towards Duval's House, until Woolwich Church steeple is a sail's breadth on with the point, leads clear of an extensive Shoal which begins with the Warren and extends nearly half across the river. After this is passed give Margaretness a good berth in passing. With the sluice open you may anchor in 17 or 18 feet.

Barking or Tripcock Reach lies in a curve from S.E. by E. and E. by N.; is a mile and a half in length. The points which form the Reach on the south are Margaretness and Crossness, and the shore between forms a concave line. The land on the north is Barking Level, that on the south Plumstead Marshes. The first Shoal is Barking Shelf, the upper end lies off the creek's mouth, the mark for which is Barking Church, and the Town House in one. For the lower end, the Town-house on the corner just open of the Powder House on the south side. To get to the southward of the Shelf, keep Duval's House two sails' breadth on with Margaretness, until you have the marks for the lower end on; then haul into mid-channel, until the south edge of Purfleet comes on with Jenningtree Point. This mark will carry you clear of the Shoal, which extends from the Leather Bottle Point. On the upper part of this Shelf there is 5 or 6 feet; but on the lower end are 2 or 3 feet. There is also a Shoal from the lower part of Gallions to Barking Creek, about one-third across the river. The mark for Dagenham Shoal is Dagenham Church on with the upper sluice, bearing N.E.  $\frac{1}{2}$  E. To clear it, keep Purfleet Hill on with Jenningtree Point.

Halfway Reach lies nearly S.E. and N.W. On the north side is a Shoal which may be avoided by keeping in mid channel. Near the Powder House, on the south side, is another Shoal. You may anchor in 17 or 18 feet by keeping Jenningtree Point on with Cold Harbour Point.

Erith Reach lies about S. by W. and N. by E., being about a mile and a half in length. Jenningtree Sand, just below Jenningtree Point, extends one-third across the river opposite Rainham Creek, having on its edge only 4 feet water. By keeping Barking Church within a sail's breadth of Dagenham Breach Point, and hauling over with Rainham Church a little open to the northward of the Ferry House, you steer clear of it. By hauling westward, you bring a remarkable tree in one with Bavin Wharf, at the eastern extremity of Erith. These objects bearing south, lead you clear from Cold Harbour Point Shoals, which have only 4 or 5 feet water upon them, and extend nearly half across the river.

The Rands, between Erith and Purfleet, is about one mile and a half long, and extends E. by S. and W. by N. Near the middle of the river, at the western part of the Reach, is Randhill Shoal, which has only 6 or 7 feet water on it. The upper end lies with Jenningtree and Cold Harbour Points in one, the lower end with Dartford Church on with the opening of the upper creek on the south shore. The leading mark to the north of Randhill Shoal is the tower in Belvidere Wood on with a white beacon near the water's edge. In this channel there is 9 or 10 feet. To sail to the south of the shoal, bring a barn which stands below Erith on with a tall tree, and keep them so until you bring the upper Chalk Wharf, at Purfleet, on with Crayfordness. In this channel there is from 13 to 18 feet.

Long Reach lies about S.S.E. and N.N.W. A Shelf lies off Crayfordness, extending to Dartford Creek: it is called Dartford Sand, it has only 2 feet water on it, and reaches about half a cable's length from the shore. By keeping Erith Church open of Crayfordness, until you open Dartford Creek, you may avoid it.

St. Clement's or Fidler's Reach lies from N.E. by E. to East. At the lower end of Longreach the water is shoal; give it, therefore, a good berth in passing. Half a cable's length on the south east of this Reach there is a Shoal, on which there is only 6 or 7 feet water: it extends as far as Broadness Point from about half-way down this Reach. On Broadness Point there is a white beacon, which is particularly useful when the land in the vicinity is flooded. A black Shelf lies on the north side, near the lower end of this Reach, beginning near the creek below St.

Clement's Church and extending down to the house above the Grays: it is steep, and dries at low water. When you are in the channel, between Broadness and the black Shelf, keep in the tide-way; the tide-way is narrow. During flood-tide there is an eddy on the east side, be careful, therefore, of standing too far over to the east side.

Grays's Reach, or Northfleet Hope, lies about North and South. There are two Shoals in this Reach, the one at the upper point below Broadness, extending along the western shore and having but 3 or 4 feet over it, the other above Tilburyness, extending down to the point, about half a cable's length from the shore, and has only 5 or 6 feet water upon it. Gravesend Mill open to the west of Northfleet-ness leads clear of it. Ebb tide sets strongly in towards Bumboat-hall, on the south-west side, and upon the three upper Chalk Wharfs at Northfleet.

Gravesend Reach lies about E.S.E. and W.N.W. Two Shoals lie on the north side and one on the south. The first lies on the north side, below the upper point, near the second Barways. The other Shoal on the north side, lies off the Coal-house Battery; it has from 10 to 12 feet water upon it, and extends about half a cable's length from the shore. The Shoal on the south side extends about a mile downwards, and begins just below the New Tavern; is about a cable's length from the shore, and has only 4 or 5 feet water upon it: to clear it keep Gravesend Church open to the northward of the Block-house. Vessels going up or down Gravesend Reach should be careful to keep near to the north shore, as many vessels are constantly at anchor, both in the middle and along the south shore.

Hope Reach lies about N.E. and S.W. A Shelf begins at the upper Hope Point, extending about a quarter of a mile downwards, and is called the Oven Shelf; it is near the shore, drying at low water. Gravesend Mill open to the southward of Denton Mill, that stands a little distance from the water's edge, below Gravesend, clears this Shoal. A Shoal, called Mucking Flat, extends about half a cable's length off shore in the bight, and stretches down almost as far as Shell Haven, in working down you may stand into 5 fathoms on the Essex shore, and into 6 fathoms on the Kentish side. When the Telegraph on the Kent side is in one with the small Battery below Hope Point, you are abreast of an 18 feet Shoal. To clear which, on the south, keep a clump of trees, to the eastward of Gravesend Mill, a little open to the eastward of East Tilbury Church.

Sea Reach lies E.S.E. and S.E. by E.  $\frac{1}{2}$  E. Below lower Hope Point, Blythe Sand begins, and extends to Yantlet Creek. Abreast of Holy Haven it stretches almost half across the river, drying partly at low water. Between this Sand and Holy Haven the depth of water is from 9 to 10 fathoms. West Tilbury Mill, well open to the north of Chadwell Church, clears this Sand. A beacon is placed a short distance within this spit. It stands upon the dry sand at low water spring-tides, with the following marks and bearings. A conspicuous round-topped tree on Canvey Island on with the eastern point of Holy Haven, bearing N.  $\frac{1}{2}$  E; the west side of the tower of Hadleigh Castle on with the eastern side of a farm house eastward of the Scar Houses, N.E.  $\frac{1}{4}$  E. and Shell Haven House, N.W.  $\frac{1}{2}$  N. Upon this Bank, a clump of rocky spots, called the Scars, stretches along shore from Holy Haven to below the Scar Houses. The Scars extend a cable's length from shore, and are steep-to. The Haven's mouth, kept well open, leads clear of them. The edge is indicated by a strong rippling of the tide.

The Chapman Beacon.—By order of the Trinity House, in April, 1831, a Buoy, chequered black and white, was laid on the edge of the Chapman, in 10 feet of water, at two miles below the entrance of Holy Haven; but in May, 1836, this buoy

was removed, and a beacon, painted red, erected in lieu of it, with the following marks:—The western side of a white house near Hadleigh Church on with the eastern part of Hadleigh Castle, N.N.E.  $\frac{1}{2}$  E.; a remarkable round-topped tree on Canvey Island half its apparent width open eastward of a farm-house upon that island, N. by W.  $\frac{1}{4}$  W.; the Fairway buoy (red) S.E. by E.  $\frac{1}{4}$  E.  $2\frac{1}{4}$  miles; the Blythe beacon, W.  $\frac{1}{2}$  N. as shown above. This part of the Chapman is steep-to.

The courses from off Holy Haven to Leigh Road are S.E. by E.  $\frac{1}{2}$  E.  $1\frac{1}{2}$  mile, and E.S.E.  $\frac{1}{2}$  E.  $3\frac{1}{2}$  miles. This leads down between the Blythe and the Chapman, within a quarter of a mile of the latter, and in the best water, 10 to 8,  $7\frac{1}{2}$ , 5, and  $4\frac{1}{2}$  fathoms. Throughout this tract, the flood sets nearly true west; it is very rapid, and the courses must be regulated accordingly.

In the fairway, at two miles below the beacon on the Chapman, is a red buoy,\* which, on the course last mentioned, will be left on the larboard side.

Leigh Road, a good anchorage, lies between the two long narrow banks named the Leigh Middle Ground, on the north, and the Nore Sand on the south. These extend in a S.E. by E. direction on each side. The shoal part of the Leigh Middle Ground lies athwart the entrance of Leigh Haven, at a mile and a half from the shore; it is a mile and three-quarters long, and nearly dry at low water; but the flat on which it lies extends further, and to the S.E. by S.

A Buoy, coloured red and white, in stripes, was laid down upon the shoal part of the Leigh Middle Ground in 1835,—at a mile and a half below the red buoy of the fairway. This buoy is marked “East River Middle,” and lies in seven feet in low water, with Shell Haven House and trees on with the S.S.W. part of the Scar Houses on Canvey Island N.W. by W.  $\frac{1}{4}$  W., and Leigh Church N. by W.  $\frac{1}{4}$  W.†

On the south side of the river, opposite the buoy of the East River Middle, and one mile and a quarter S.S.W. from it, is a black buoy, called that of the Jenkin, which is designed to facilitate the navigation of the swash called the Jenkin, lying between the Nore Sand and the Isle of Grain. At  $2\frac{1}{2}$  miles below the Jenkin buoy, is the white buoy on the Nore Sand;‡ and at a mile and three-quarters S.E. by E. from the latter is the Nore Light. Therefore, in proceeding eastward from the Leigh Road, you leave the black buoy of the Jenkin, the white buoy on the Nore Sand, and the Nore Light on the starboard, while the striped buoy of Leigh Middle, and the Shoebury buoys (black) are to be left on the larboard side.

From Leigh Road, with 4 fathoms of water, a direct course to the Nore Light Vessel is S.E.  $\frac{1}{2}$  E., 5 miles; and to the West Shoebury buoy S.E. by E.  $\frac{1}{2}$  E.,  $4\frac{1}{2}$  miles. The depths will be best understood by reference to the chart.

Off Southend there is a Bank called the Western Maplin, to the distance of 7 miles eastward, and its breadth, of Shoeburyness, is a mile from the shore. A black

\* This buoy lies nearly in a line, and in the middle of the River, between Leigh and Yantlet. It was laid down, in 1809, to mark the place of a sunken wreck, and has since been retained to mark the fairway. It lies at  $4\frac{1}{2}$  miles below Holy Haven, with Leigh Church bearing N. by E.  $\frac{1}{2}$  E., the easternmost house on Canvey Island N.W. by N., and Pitsey Church about a ship's length to the northward of it. The Nore Light bearing S.E.  $\frac{1}{2}$  E. 6 miles.

† The other marks given in the Trinity House notice are, a barn (having a remarkable round-topped tree close west of it,) upon the Isle of Sheppey, on with the easternmost windmill at Mile Town, S.  $\frac{1}{4}$  E.; Prittlewell Church, N.N.E.; and the Nore Light S.E.

‡ The Nore Sand Buoy, on the northern edge of the Sand, lies with the Nore Light Vessel bearing S.E. by E. two miles distant. It lies in 17 feet of water, with the East Mill on the Essex shore a little open to the eastward of the Terrace at Southend, N. by W.; the Land's End of Sheppey, S.S.E.  $\frac{1}{2}$  E.; Prittlewell Church, N.  $\frac{1}{2}$  W. At the length of a cable and a half to the north of the buoy there are 5 fathoms; then 6, 5, and  $4\frac{1}{2}$ , to the River Middle.



buoy, called Shoeburyness buoy, lies in 3 fathoms, Hamlet Windmill bearing N.W.  $\frac{1}{2}$  N. in a line with the west end of Southend Terrace; Queenborough Windmill S.W.  $\frac{1}{2}$  W. in a line with the highest windmill at Mile-town, and the Nore Light Vessel nearly S. by W.  $\frac{1}{4}$  W. A black buoy is also laid down in 5 fathoms, with West Shoebury buoy bearing W.N.W.  $\frac{1}{2}$  W. about 2 miles; the Blacktail Beacon nearly east; Prittlewell Church, N.W.  $\frac{1}{4}$  N., on with the third building eastward of Shoebury preventive station-house; and a white windmill, inland N.N.E., in a line with the third house eastward of a long barn on Foulness island.

The Nore Light Vessel lies on the eastern extremity or spit of the Nore Sand. It is situated at the distance of 41 nautical, or 47 statute miles from London-bridge. This vessel has only one lantern, but displays a light of considerable brilliancy, and visible in every direction; in the day-time a red flag is hoisted at the mast-head, and a gong is sounded in foggy weather. The marks for the vessel are Minster Church on with the easternmost part of a triangular field called Mizen Hedge, bearing S.S.W.  $\frac{1}{4}$  W., the Garrison Point at Sheerness W.S.W.  $\frac{1}{4}$  W., distant  $3\frac{1}{2}$  miles, and Great Wakering Church N.N.E.

The anchorage at the Nore is in from 6 to 9 fathoms, either to the eastward or westward of the light, between the Bar and the Nore Sand, with Minster Church S.S.W.  $\frac{1}{4}$  W., and the Nore Light N.  $\frac{1}{4}$  W. At the Little Nore the anchorage is E.N.E. nearly a mile from Sheerness Point; from the Nore Light W. by S.  $2\frac{1}{2}$  miles, with Queenborough Church S.W.  $\frac{1}{2}$  W. on the west end of Turf Redoubt, a little to the eastward of the town of Sheerness.

From the Great to the Little Nore, bring Minster Church S.S.W. on the first hollow of land eastward of the most western cliff of Sheppey Island, and stand towards it until a beacon, within Sheerness Point, appears a handspike's length open to the northward of a chimney with a white top, in the second buildings to the southward of the Garrison Point at Sheerness; then steer to the westward until Minster Church appears upon the west end of the West Cliff; steer west rather northwardly, until the beacon appears midway between the first and second buildings southward of Garrison Point. With Queenborough Church to the east end of Mile-town, bring the beacon to touch the south side of the first buildings to southward of Garrison Point.

Vessels wind-bound usually lie at Blackstakes, within the Medway, or below the west spit of Queenborough Swale, in from 3 to 5 fathoms.

With ebb tide, there is a strong eddy on the western shore; and, at Sheerness, another equally strong with the flood.

In November, 1834, the Trinity House issued the following notice:—"In order to facilitate the navigation through the Swatchway, between the Nore Sand and Grain Spit, a red buoy, marked 'Grain Spit,' has been laid on the eastern part of that spit in nine feet at low water, with the following marks and compass bearings, viz.:—A conspicuous clump of trees on the Isle of Sheppey, bearing S.  $70^{\circ}$  W., and on with a high chimney eastward of Mile Town; a red-tiled barn, with a remarkable tree southward of it, bearing N.  $66^{\circ}$  W., and on with two trees northward of a black-roofed barn on the Isle of Grain; Minster Mill bearing S.  $19^{\circ} 30'$  E. and open eastward of the preventive station, the width of the station; Garrison Point S.  $37^{\circ} 30'$  W., Jenkin Buoy N.  $27^{\circ} 30'$  W.; and the Nore Light-vessel S.  $82^{\circ} 30'$  E."

Between Sheerness and Queenborough is a shelf of mud, called the Lapwell or Lappel, which dries at low water. From the town, at the south end of the King's Dock and mast pond, at Sheerness, is a pier or wharf which jets out 300 feet

westward into the river : there is, also, on the Lappel, a tide-pier 20 feet wide, and of the elevation of 2 feet above the oaze, which is attached to the wharf, and runs out 900 feet therefrom, in a western direction from the town into the river, down to low water mark. It is, therefore, improper for any vessel to sail over or near the tide-pier, there being no depth of water for vessels of more than 4 feet draught when the tide is over the same. The pier or wharf, and also the parallel line and direction in which the tide-pier lies, may be distinctly observed, and they may be known at night by a light on the eastern end, near the town, which is fixed at the extremity of the wharf.

Sheerness Reach extends S.W. by W. and W.N.W. about 2 miles, having in its channel from 5 to 12 fathoms. On the shore of the Isle of Grain, it is shoal to a considerable distance, the shoal extending eastward so as to form Sheerness middle ground. The Garrison Point is deep water.

Lapwell Bank is to the eastward and southward, as well as the entrance to Queensborough Swale. On the bar of the latter the water is 12 feet, and extends half a mile from the shore, and the west side of which lies with a beacon on the western corner of the Swale in one with Barrow Hill in Sheppey, bearing S.  $\frac{1}{4}$  W. A little above this is the anchorage.

**TIDES.** The time of flowing and the vertical rising of the tide, on the full and change days of the moon, in the River Thames, are nearly as follow, viz. :—At London Bridge ten minutes past two, at Blackwall and Woolwich five minutes past two, at Purfleet three-quarters past one, and at Gravesend half-past one. At Purfleet it rises 17, at Woolwich 18, and at London about 19 feet; at Old or Holy Haven it flows till three-quarters past twelve and rises 15 feet, and at the Nore till half-past twelve and rises 14 feet. Allowance must always be made for easterly winds, because, with such winds, the tide flows sooner, and *vice versa*.

---

## SECTION II.

---

### FROM THE NORE TO MARGATE ROADS.

From Sheerness to the eastward there is a large Flat called the Cant, extending a good distance on the north side of Sheppey; in a line with the bar or middle ground of Sheerness, it extends E.S.E.  $\frac{1}{2}$  E., about 5 miles. On the edge, in 4 fathoms, lies a white buoy, bearing S.E. by E.  $\frac{1}{4}$  E. from the Nore Light, and about an equal distance from shore.

The Spile runs in an E. by S. direction, is a narrow Shoal joining the Red Sand, its breadth being less than a quarter of a mile, and having 1 or 2 feet water on it: on the western extremity is placed a black buoy, in 10 feet water. A clump of trees, at the lower part of sloping ground on the distant land, on with the extreme end of the high land of Sheppey S.S.W.  $\frac{1}{2}$  W; the Nore Light-ship N.W.  $3\frac{1}{2}$  miles; the Dock-yard Sheers on with the town of Sheerness New Church W.N.W.  $\frac{1}{4}$  W.; Minster Church W.  $\frac{1}{4}$  S.; the Cant buoy north, a little easterly, are the marks for it. The Cant buoy must be left on the larboard side.

Half a mile distant from the Spile is a Shoal called the Middle Ground. The middle is the broadest part, being about one-third of a mile across; the two extremities much narrower, and having 8 or 9 feet over them; a black and white buoy is

at the western end. Marks :—Shottenden Mill in one with the west Muscle-house in Sheppey, S.S.W.  $\frac{1}{2}$  W.; Reculver Towers, their length on the west end of Cleavewood S.E.  $\frac{1}{4}$  S.; the Spile buoy N.W.  $\frac{1}{2}$  N. one mile and a quarter, and the west buoy of the Spaniard S.E.  $\frac{1}{2}$  S. The Gillman and this Sand form the north side of Five Fathom Channel. A buoy, painted circularly red and white, is on the south-eastern edge of the Sand, about a mile and a half from the above buoy, lying in 11 feet water; the marks for which are, the Sheer Hulk at Sheerness open to the southward of the new church, the breadth of its spire W.N.W.  $\frac{1}{4}$  W., and the Gillman buoy E.S.E.  $\frac{1}{2}$  E.; this buoy should be left on your larboard side.

The Spaniard forms the south side of Five Fathom Channel; it has a buoy at each end, the western one being white, with a staff and black ball, from which Minster west mill is one with the south side of Reculver Towers S.E.  $\frac{1}{4}$  S.; Middle Ground spit buoy E.  $\frac{1}{2}$  N.; Whitstable Church tower in a line with the centre of Whitstable Tavern S.  $\frac{1}{2}$  E.; and Spaniard east buoy E. by S. On the sand, near this buoy, is 9 feet water. The east buoy of the Spaniard is black, having on it a staff and inverted cone, in 10 feet water; lies with the west end of Cleavewood in a line with the west end of Lower Hale grove, the black mill at Herne, its width open westward of a white mill on the beach S.  $\frac{1}{2}$  E., and the west buoy of the Pan Shoal S.E. by E.  $\frac{1}{4}$  E. This sand is about  $3\frac{1}{2}$  miles long, towards the middle several parts dry at low water, near which is placed a white buoy: leave this sand on your starboard side.

The Gillman is divided into two parts by a small swashway, is about a mile long and very narrow. On the south side is a red buoy, lying in 2 fathoms; lies with the middle buoy of the Spaniard S.W. by W.  $\frac{1}{4}$  W.; the west buoy of the Spaniard W.  $\frac{1}{2}$  N., and the east buoy E.S.E.  $\frac{1}{4}$  E. The east Gillman has only 6 feet water over it.

North of the Spaniard lies the Spell: it is a small narrow sand. Joining this sand is the Woolpack. These two sands form the northern boundary of the Narrows Channel. The Woolpack is divided from the Margate Sands by a Swashway, with 9 feet water; on some parts it dries at low water, and only 4 to 6 feet water on any part of it.

Off the west part of the west spit of Margate Sand is the Searn, a patch with only 6 feet water over it. The marks for it are, Chislet mill open to the eastward of the first large house east of the Reculvers, bearing S.W.  $\frac{1}{4}$  S.; St. Peter's Church S.E.  $\frac{1}{4}$  E., and Hook Spit buoy S.E.  $\frac{1}{4}$  S. about 2 miles distant.

The Last is a narrow sand, having from 4 to 6 feet water on it; it is about a mile in length.

In consequence of a change in the sands, and decrease of depth in the Narrows, the buoys of the Spell, Woolpack, and Searn, were taken up in 1819; and, in lieu, the Horse Channel has been buoyed, with three black buoys on the south side of the Last, which forms the north side of the channel, and a red one on the Horse, on the south side of the channel. The buoys lie as follow :—

West Buoy of the Last; black, with a staff and ball, in  $11\frac{1}{2}$  feet, on the larboard side. Marks :—Reculver Steeple, S. by E.; Stud Hill on the southernmost houses on Hampton Hill, W. by S.  $\frac{1}{4}$  S.; the low west end of Cleavewood upon the east end of Upper Hale grove; the middle buoy of the Last, S.E. by E.  $\frac{1}{4}$  E.;\* and the buoy of the Horse S.E.

\* The west buoy of the Last and three following buoys of the Horse Channel now lie in a line S.E. by E.  $\frac{1}{4}$  E. and N.W. by W.  $\frac{1}{4}$  W.

Tail of the Horse; red, in 10 feet; on the starboard side. Marks.—Waldershare Monument, midway between George's Farm-house and the first house to the eastward of it; Reculver steeple, S.  $\frac{1}{2}$  W.; North-Down Tower, on the tip-end of the West Cliff in Marsh Bay, S.E. by E.; the West buoy of the Last, N.W.

Middle Buoy of the Last; black, in 10 feet, on the larboard side. Marks.—Reculver steeple, S. by W.; the Horse buoy, S.W. by W.  $\frac{1}{4}$  W.; the East Last buoy, S.E. by E.  $\frac{1}{4}$  E.; the West Last buoy, N.W. by W.  $\frac{1}{4}$  W.; Waldershare Monument, appearing one-third of the distance from Reculver Barn towards George's Farm-house.

East Buoy of the Last; black, in 10 feet, on the larboard side, and on the southernmost part of the East end of the sand. Marks.—The West end of the Chislet Miller's House, upon the East end of the first house next westward of Reculver steeple, bearing S.W.  $\frac{1}{4}$  S.; the Horse buoy, W.N.W.  $\frac{1}{4}$  W.; the Middle Last buoy, N.W. by W.  $\frac{1}{4}$  W.; the Gore Patch buoy, S.E. by E.  $\frac{1}{4}$  E. half a mile.

Gore Patch Buoy; striped black and white, in 6 feet, on the larboard side. Marks.—West end of Cleave Wood, in a line with the Preventive station on Birchington Cliff, bearing S.S.E.; the east end of the Miller's house at Chislet, in a line with the west end of Vantaper farm buildings, S.W.; and the East buoy of the Last, N.W. by W.  $\frac{1}{4}$  W.

Hook Buoy, on the S.W. spit of Margate sand; chequered red and white, in 4 fathoms, on the larboard side. Marks.—Hillborough Church, in line with the south side of the Reculver spires, W.S.W.  $\frac{1}{4}$  W.; the west end of Birchington Wood, in line with Birchington Western Windmill, S.S.E.  $\frac{1}{4}$  E.; the Gore Patch buoy, N.W. by W.

S.E. Buoy of Margate sand; white, with a black cross on the head, staff, and ball, in 4 fathoms, on the larboard side. Marks.—North-Down tower, in line with the small spire of Margate Old Church, S.E.  $\frac{1}{4}$  E.; St. Nicholas Church tower, in a line with St. Nicholas Preventive Station-house, S.W. southerly; Birchington Church, S.  $\frac{1}{4}$  E.; Reculver towers West; and Margate East Buoy nearly E.  $\frac{1}{4}$  N.,  $5\frac{1}{2}$  miles.

East Buoy of Margate sand; black, with staff and inverted cone, in 4 fathoms, on the starboard side. Marks.—The cupola of Margate Old Church, in a line with the chancel end of the new church; the high tower of Moro Castle, between the second and the third black cliffs to the westward of the south cliff at Kingsgate; a tree, which stands to the eastward of Minster East Mill, just touching the north side of the Salt-water Bathing-house, which has a middle gable at Nayland; the west end of Birchington Wood on with the east cliff of Westgate Bay, and the North Foreland Light-house, bearing S.  $\frac{1}{2}$  W. a little westerly, distant  $4\frac{1}{2}$  miles.

The Margate sands are about  $8\frac{1}{2}$  miles long and about 2 miles wide. The middle part dries at low water, and is only covered by about 9 feet water at low spring tides. The northern edge is steep-to, and dries for a considerable distance to the eastward. Shallow spits run out from the east and west ends, having only from 2 to 9 feet water over them. From the East buoy to the eastern spit is a Flat, having from 2 to 4 fathoms on it. The Hook spit is a shallow part of the sand, drying at low water, upon which is a white buoy with a black cross on the head, with a staff and ball, in 2 fathoms. The marks for it are:—St. Peter's Church half-way between the second and third very plain black streaks from the westward of the east cliffs of Westgate bay, bearing S.E.  $\frac{1}{4}$  E.; the Reculvers W. by S.; and Moncton beacon, on the east end of Upper Hale Grove, S.  $\frac{1}{2}$  W.

About mid-channel, between Margate sand and the shore, lies Cliff's End Bank;

the eastern end with Birchington east mill on with two houses on the cliff; the western end with Birchington Church and Seed Mill bearing S.  $\frac{1}{2}$  E. The shoalest water upon it is 9 or 10 feet, and is about a mile in length.

Off Foreness Point is a rocky ledge, running off about half a mile in a N.N.E. direction, called Long Nose. At the extremity, in 14 feet water, is a red buoy, with the name, Long Nose, painted on it: it bears from the North Foreland Lighthouse S.  $\frac{1}{4}$  W.; the westernmost house on North Down, on the open gat or waggon-way in the cliff, S.W.  $\frac{1}{4}$  W.; Birchington Seed Mill on with Ledge Point W.  $\frac{1}{4}$  N.; North Down Tower S.W.  $\frac{1}{4}$  S.

*Directions for Sailing from the Nore, through the Five Fathom, Horse Channels, &c., to Margate Roads.*

**Five Fathom Channel.**—In running down from the Nore, steer E.S.E.  $3\frac{1}{2}$  miles; bring the Nore Light-ship on with the rising land within Yantlet Point, bearing W.N.W. Keeping on, this mark will lead along the edge of the Cant below the white buoy, till Leston Church comes open to the eastward of Warden Point, or the Land's End of Sheppey bearing S.W. by S., then steer S. by W.  $\frac{1}{4}$  W. two miles for the Five Fathom Channel, leaving the Cant buoy on the starboard, and the buoys of the Spile and the Middle Ground on the larboard side, having from 10 to 12 feet at low water.

In working through the Five Fathom Channel, tack immediately that the water shoals on either side. Over the Spaniard the flood sets strong towards the East Swale, and the ebb the contrary. The leading mark through is Minster Church, in Sheppey, on with the middle of Bralgate Bay, bearing W. by N. The best water is on the north side, near to the Gilman, which is steep-to. The opposite side, near the Spaniard, is flat. The western part of the channel has from 12 to 13 feet; abreast of the Gilman from 12 to 18 at low water.

In working to the northward of the Cant, stand towards its edge to 8 fathoms to the northward, according to your convenience. Care should be taken to avoid the Cant Knoll, a small steep shoal with only 9 feet water, which lies on the Cant edge, to the southward of the buoy, with Shottenden Mill on with the high land of Sheppey, bearing S. by W.  $\frac{1}{4}$  W.

In sailing to the southward of the Cant Edge shoals, across the Cant, keep the Nore Light-ship in the middle of the valley, between the high land of Fobbing and the high land to the N.E. of Holy Haven. This leads near the west buoy of the Spaniard, and across the Cant in 9 or 10 feet low water, where the Five Fathom channel will be open. From the Nore to the west buoy of the Spaniard the distance is  $5\frac{1}{2}$  miles.

About half flood you may sail down on the Cant, should the wind be from the west or south, in the part where there are 2 fathoms at low water. At this time of tide vessels drawing 15 feet may sail to the entrance of the Five Fathom Channel, by keeping the Nore Light-ship N.W.

**Horse Channel.**—The course from the east buoy of the Spaniard to the west buoy of the Last, across the Flats, is S.S.E. 5 miles. The depth is from 10 to 14 feet, with several shoaler spots. Particular allowance must be made for the tide, which sets nearly across the beam. In running for the buoy of the Last, bring the west end of Cleave Wood upon the east end of Upper Hale Grove. In working stand to the westward until St. Nicholas' Church comes on with Reculver Church, and to the eastward until Sar Mill nearly touches the Reculvers; in this course you will have 9 to 11 feet at low water. If requisite to anchor before entering the

Horse Channel, bring up in Horsehoe Hole, between the South Knoll and Wool-pack, in from 15 to 20 feet at low water, with St. Peter's Church on the middle of Marsh Bay, and the Reculvers S. by W.  $\frac{1}{2}$  W., or with the Pan beacon open to the westward of the buoy of the South Knoll.

The Entrance of the Narrows lies between the Cross Bank, with the Last on the south side and the Spell on the north. In entering here and working through you must be guided by the lead and draught of water. Vessels of a draught of water to pass the Narrows may, with more safety, use the Horse Channel at the times of tide they have been accustomed to pass the former. Those running down from the west buoy of the Last may steer for the Horse buoy, passing to the northward of it, and then keeping the North-Down Tower on the tip end of the west cliff of Marsh Bay, will lead across the ridge about two-thirds of the distance between the Gore Patch Buoy and 8 feet at low water spring-tides on the main.

Below the two buoys, from the Horse Channel, you enter the Gore Channel on the S.W. of Margate sands; with the last mark continue on, leaving the striped buoy on the Gore Patch on the larboard hand. Steering S.E. by E. you pass to the northward of the white beacon buoy on the hook of Margate sand, the thwart mark for which is Moncton Beacon, on the eastern part of Upper Hale Grove.

South Channel.—The S.E. by E. course, with North-Down Tower on the tip-end of the west cliff of Marsh Bay, is to be continued until Birchington Mill, bearing S. by E., is on with Cliffsend, and here you change the course to E. by S. with the Reculvers W. by N., which lead into and through the South Channel, until you are off Longnose, with Margate New Church (near Fort Point) bearing W. by S. The new church, being on an eminence, is a most conspicuous object. Its tower is square, surmounted with four turrets, and its height above the pavement 136 feet. Distance on the E. by S. course,  $6\frac{1}{4}$  miles. From the Gore you may pass to the northward of Cliffsend Bank, with Bishopton Farm, which stands on the first high land westward of the Reculvers open a little to the northward of the same. This leads, in a fair way, between the Beacon Buoy on the Hook of Margate sand and Cliffsend Bank; and, when Birchington steeple bears S. by W., you will be to the eastward of it, and may proceed eastward, as most convenient.

To clear the Point called Longnose, which lies off Foreness, keep Birchington Seed-mill nearly West, open of Ledge Point; or all St. Margaret's steeple (near the South Foreland) in sight above the land. When the North Foreland Light-house bears S.S.W.  $\frac{1}{4}$  W., you will be to the eastward of Longnose, which runs off N.E. two-thirds of a mile from Foreness, and has 5 fathoms close to it.

The usual leading-mark for going to the southward of the Cliffsend Bank is, a small grove, appearing like a barn, kept open to the southward of the Reculver. In the channel are from 4 to 6 fathoms. With Birchington steeple S. by W., you will have passed the bank, and may stand toward Margate Sand into 5 or 4 fathoms, and towards the shore into the same depth, until below Margate. Then stand toward the shore, until Birchington Seed-mill comes nearly on with Ledge Point, or into 6 and 5 fathoms, and into the same depth towards Margate sand.

Margate Light.—A stone light-house stands on the pier-head, upon the larboard side in entering. This light-house is in form of a handsome fluted column, 70 feet in height, and exhibits a red light, at 85 feet above the level of high water, which, in clear weather, may be seen at three leagues off. The light is kept up from sunset to sun-rise, and by day a blue flag is kept hoisted during the time that vessels may enter. On the extremity of the jetty, or Jarvis' landing place, is a lantern light for the use of the fishermen, to prevent their running foul of it. The harbour

of Margate is situate in a small bay between two extensive flats of chalk rocks, the Nayland on the west, and the Fulsam on the east, both of which are covered before high water. The artificial harbour is formed by a stone pier, which commences on the eastern side of the bay, around which the town is situate, and extends 800 feet to the westward, in an irregular curve, leaving the entrance open to the N.W. The average rise of spring tides at the pier head is about 13 feet and that of neap tides 8 feet; but spring tides ebb outside of the pier head and leave the harbour dry at low water. The jetty, of wood, extends outward from the foot of the pier, over the Fulsam rock, to the distance of 1100 feet, for the convenience of passengers, &c., landing from or embarking in the steam packets at low water. The pier and jetty belong to a joint stock company. In a national point of view, the harbour in its present state can be considered only as affording the means of supplying pilots, anchors, and cables, &c., to vessels driven into the Roads in distress.—*Report of the Admiralty Commissioners, 1840.*

**Anchorage.**—In the Gore, you may anchor in 5 fathoms, with St. Peter's Church mid-way between the house and barn in Westgate Bay, and with Moncton Beacon on the middle of Upper Hale Grove, S.  $\frac{1}{4}$  W. in 4 $\frac{1}{2}$  to 5 $\frac{1}{2}$  fathoms. With a northerly wind you may anchor under Margate sand, off Westgate Bay, with Margate old Church on, or nearly on, Nayland Point, and Minster west mill on a barn in the bay, S. by W.  $\frac{1}{4}$  W. where you will have 5 and 6 fathoms, good ground.

Near the Hook, you may also anchor in about 5 fathoms, with Moncton Beacon anywhere between the west side of Lower Hale Grove and the middle of Upper Hale Grove; and St. Peter's Church on with the house in Westgate Bay. In Margate Roads you may anchor with Margate old Church on the pier-head, bearing south, and Bishopton farm on the Reculvers W.  $\frac{1}{4}$  N. in 7 or 7 $\frac{1}{2}$  fathoms. Another position is at one mile lower, with Nayland and Minster east mills in one; Foreness S.S.E.  $\frac{1}{4}$  E. in 6 $\frac{1}{2}$  or 7 fathoms. The last situation will serve with a southerly wind.

Between the Columbine sand on the north, and Whitstable shoals on the south, lies the East Swale, forming a good harbour for small vessels. At the entrance are placed four buoys, two on the Columbine, one near the spit of the Pollard, and one between the east end of the Columbine and Whitstable. The buoys on the Columbine are red, that on the Pollard spit, black, and that between the east end of the Columbine and Whitstable black, with a staff and ball. Westward of the Columbine is the southern part of the Cant, and beyond this is Shellness, the S.E. point of Sheppey Island, having a beacon upon it.

On the south side, about 3 miles above Shellness, is Faversham Creek, having a beacon to distinguish its entrance. On the opposite side, on Sheppey, is Harty Village and Church, and in the river, between these two, at about two-thirds from the south shore, is a Bank called the Horse, which is partly dry at low water, and 1 $\frac{1}{2}$  mile in length.

About 7 miles S.E. by S. from the white buoy on the west end of the Spaniard, is Herne Bay; it has a handsome pier about 3,000 feet long. On its head there is a small lighthouse with a flag-staff.

*From the Nore to the North Foreland, through the Nob, Oaze, Queen's and Prince's Channels.*

This track is well buoyed, and bounded by the following sands:—The Oaze, Spile, Red Sand, Shivering Nob, Girdler, North Knoll, Pan Sand, Patch, and Speck, Tongue, South Knoll, Wedge and Margate Sands.

The Oaze sand is about 4 $\frac{1}{2}$  miles long and half a mile broad, the water over it

shallow, the middle part not having more than 6 feet water over it: there is a buoy at each end, the west end one being red, with a staff and ball attached to it, and lies in 3 fathoms water. The marks for it:—The Nore Light W.N.W.  $\frac{1}{2}$  W.  $4\frac{1}{2}$  miles; Shottenden Mill exactly midway between the two muscle houses near Shellness, on the eastern part of Sheppey, bearing S.S.W.  $\frac{1}{4}$  W.; and the Black Tail Beacon N.N.E. The east buoy is white, and lies in 3 fathoms. Marks:—The Oaze west buoy west  $4\frac{1}{2}$  miles; Black Tail Beacon N.W. by W. 4 miles; Shoe Beacon N.E. by N.  $4\frac{1}{2}$  miles; buoy of the Nob S.E. by E.  $\frac{1}{4}$  E.  $1\frac{1}{2}$  mile; the Shivering sand buoy S.E.  $\frac{1}{4}$  S.  $2\frac{1}{2}$  miles; and Minster Church W.  $\frac{1}{4}$  S. There is a good passage between the east buoy of the Oaze and Knock John, with 3 and four fathoms near the buoy, but gets shallow as it nears the Knock, to 6 feet.

Spile, Red, and Shivering Sands.—The Spile stretches E. by S.  $1\frac{1}{2}$  mile, where it joins the Red sand, which continues in a similar direction for  $2\frac{1}{2}$  miles further, some parts of it dry at low water. The Red sand is separated from the Shivering sand by a small swashway of only 9 feet water. On the north side of the Shivering lies a red buoy in 14 feet of water. Marks.—The Cant Buoy W. by N.  $5\frac{1}{2}$  miles; the west buoy of the Oaze W.S.W. 4 miles; the East Shivering Buoy E. by S.  $1\frac{1}{2}$  mile; the Reculvers S. by E.  $\frac{1}{4}$  E.; Minster Church in Sheppey west, a little southerly; and the East Oaze Buoy N.N.E. The East Buoy of the Shivering is striped black and white, it lies in 3 fathoms, and must be left to the starboard; upon it is a staff and ball. Marks.—Ash Church, apparently about midway between the village of Reculver and George's Farm S.  $\frac{1}{4}$  E.; Minster Church West; East Buoy of the Oaze N.W.  $\frac{1}{4}$  N.  $2\frac{1}{2}$  miles; and the Girdler Buoy S.  $\frac{1}{4}$  E. half a mile. Southward of the buoy there is anchorage in 7 to 9 fathoms; this spot is called the first Deep.

The Nob is a spit of sand nearly 2 miles long and half a mile broad; on its western end is a red buoy which lies in 4 fathoms, and should be left on the larboard side, the marks for which are the Shoe Beacon N. by E.  $\frac{1}{4}$  E.; the east buoy of the Shivering sand S. by W.  $\frac{1}{4}$  W. 1 mile, and the buoy of the Girdler S.  $\frac{1}{4}$  W.

The Girdler is a narrow patch about 2 miles long, and at the west of it is a black buoy in 17 feet of water. Marks.—The buoy of the Nob N.  $\frac{1}{4}$  E.; the Beacon Buoy of the Shivering N.  $\frac{1}{4}$  W.; the buoy of the Red sand N.W. by W.  $\frac{1}{4}$  W.; Ash Church open to the right of the three barns which stand next westward of the Reculvers, the width of these barns and bearing S.  $\frac{1}{4}$  E.; the Beacon Buoy, on the S.W. end of the Pan sand S. by E. easterly; and on with the middle of Lower Hale Grove; Reading-street Beacon open to the left of North-Down Tower, the length of that tower, bearing S.E. by S. and open to the eastward of the North Knoll Buoy. Just to the southward of the buoy is a small knoll of only 15 feet of water.

North Knoll.—This is a shoal of only 9 feet water, at the west end of which is a buoy, chequered red and white; it lies in  $2\frac{1}{2}$  fathoms, and must be left on the larboard. Marks—Reading beacon, a large boat's length open to the eastward of North Down Monument, S.E.  $\frac{1}{4}$  S.; Ash church apparently one-third of the distance from Sar Mill towards Reculver church, the latter bearing S.  $\frac{1}{4}$  W.; Girdler buoy N. W.  $1\frac{1}{2}$  mile and the Pan sand buoy S. by W.  $\frac{1}{4}$  W.  $1\frac{1}{2}$  mile.

The southern side of the Girdler Flat extends from the North Knoll buoy E. by S. 8 miles, or to the southern entrance of Thomas's Channel; there are some dry parts upon these flats, particularly one called the north shoal, lying about E. by N. from the Knoll buoy, distant one mile, and still nearer to the eastern end of the dry Spit of the Girdler. There is also another patch called the Fairway shoal, which



lies on the edge of the Girdler Flat and dries; this bears E.  $\frac{1}{2}$  S. from the Knoll buoy, distant 4 miles. The inner edge of the Girdler Flat forms the northern boundary of the Prince's Channel, while the Pan sand, Speck, and Tongue are its limits on the southward.

The Pan sand dries at spring ebbs, and extends  $1\frac{1}{2}$  mile E.S.E.  $\frac{1}{2}$  E. and W.N.W.  $\frac{1}{2}$  W. being about three-quarters of a mile broad. At the west end of it are from 3 to 6 feet water, and on the east end from 6 to 9 feet. The Pan Patch is at its eastern end; it is a small knoll of  $1\frac{1}{2}$  fathom, upon which is a white buoy in  $2\frac{1}{2}$  fathoms. Marks:—Moncton beacon nearly south, on with Upper Hale Grove; a conspicuous high tree to the eastward of Minster mill, open to the westward of Birchington Church, S. by E.; Pan beacon N.W. by W.; South Knoll Buoy W.S.W.  $\frac{1}{2}$  W. The Patch, which extends hence towards the beacon, has only 9 feet water on it at low water.

A white buoy, with a staff and ball, lies at the west end of the Pan sand in  $2\frac{1}{2}$  fathoms, it must be left to the larboard. Marks:—Ash Church apparently mid-way between Sar mill and Reculver Church, S.  $\frac{1}{2}$  W.; a white house in Herne Bay on with the west end of a thicket of trees to the westward of Herne mill; North Knoll buoy N. by E.  $\frac{1}{2}$  E.; Girdler buoy N.N.W.  $\frac{1}{2}$  W.  $2\frac{1}{2}$  miles; East buoy of the Spaniard, W.N.W.  $3\frac{1}{2}$  miles, and buoy of the South Knoll S.E.  $\frac{1}{2}$  S. On the 3d April, 1828, a standing beacon was fixed where a chequered buoy was formerly placed. Marks:—Ash Church, a ship's length open to the eastward of Sar mill, about S.  $\frac{3}{4}$  W.; Moncton beacon open to the westward of the west end of Upper Hale Grove; the Pan Patch buoy S.E. by E. and the Reculver S. by W.  $\frac{1}{2}$  W.

The Pan Speck lies about 1 mile N. by E. from the Pan Patch buoy, and has only 1 foot at low water. From this spot St. Peter's Church is a sail's breadth open to the westward of Margate old Church, bearing S.S.E.  $\frac{1}{2}$  E. and the east buoy of the Tongue S.E. by E.  $\frac{1}{2}$  E.

The Tongue sand lies nearly E. by S.  $2\frac{1}{2}$  miles, having two buoys upon it. Near the west buoy is a part with only 6 feet, but it deepens to the eastward to 3 and 4 fathoms. Between the Pan Speck and the Tongue are several patches of shoal water, with 5 and 5 fathoms round them. The West Tongue buoy is white and lies in 4 fathoms, and must be left on the larboard. Marks.—Mount Pleasant on with Birchington steeple S. by W. southerly; St. Peter's Church in one with Margate New Church, S. by E.  $\frac{1}{2}$  E.; and Monkton Beacon on the middle of East or Lower Hale Grove, nearly S. by W.  $\frac{1}{2}$  W. The east buoy of the Tongue is also white, with half black bottom, and lies in  $3\frac{1}{2}$  fathoms. Marks.—Margate Old Church on the east end of the Assembly-house, S. by W.  $\frac{1}{2}$  W.; the North spit Buoy of Margate sand S.W. by W.  $\frac{1}{2}$  W.  $2\frac{1}{2}$  miles; east buoy of Margate sands, S. by E.  $\frac{1}{2}$  E.  $3\frac{1}{2}$  miles; and the North Foreland Lighthouse south, rather easterly.

The South Knoll has only 9 or 10 feet over it; a black buoy points out its situation and lies in 2 fathoms. Marks.—Ash Church on with Sar Mill; the west end of a clump of trees on with the west end of a barn on Hampton Hill; the Pan Patch buoy E. by N. and the beacon of the Pan sand N.E. by N. distant two-thirds of a mile. The best passage is between these buoys in  $4\frac{1}{2}$  fathoms.

The Wedge is a small narrow sand, which lies on the northern edge of the shallow water, which surrounds Margate sands, having between them a channel of 4 and 5 fathoms: on the northern edge of the Wedge lies a red buoy in 4 fathoms. Marks:—Moncton beacon on with East Hale Grove, S. by W.  $\frac{1}{2}$  W.; the New Church near the Fort Point, Margate, S.S.E.  $\frac{1}{2}$  E.; the Pan Patch buoy, N.W.  $\frac{1}{2}$

W.  $2\frac{1}{2}$  miles; the west buoy of the Tongue, N.N.E.  $\frac{1}{4}$  E.  $1\frac{1}{2}$  mile; and the North spit buoy, E.S.E.  $\frac{1}{4}$  E.  $1\frac{1}{2}$  mile.

Margate sand buoy of the North spit is black, and should be left on the star-board side. It lies  $1\frac{1}{2}$  mile E.S.E.  $\frac{1}{4}$  E. from the buoy of the Wedge, and  $1\frac{1}{2}$  mile, N.W. by W. from the east buoy of Margate sands. Marks:—Minster mill on with the barn in Westgate Bay, S. by W.  $\frac{1}{4}$  W., and Reading beacon on with North Down house, bearing nearly S. by E.  $\frac{1}{4}$  E.

A buoy, chequered black and white, has recently been laid on the north-eastern projection of Margate sand in 4 fathoms, with the following marks and compass bearings, viz.:—A windmill, on the back land, in one with the first house next westward of the three windmills at Margate, bearing S. by W.  $\frac{1}{4}$  W.; North Foreland Lighthouse, S.  $\frac{1}{4}$  E.; North spit Buoy, W.N.W.; East Tongue Buoy, N.W.  $\frac{1}{4}$  N.; east buoy of Margate sand, S.S.E.  $\frac{1}{4}$  E.

The east buoy of Margate sand is black, with a staff and inverted cone. It lies in four fathoms, at the extremity of the sand. It bears S.E. by E. 4 miles from the North spit buoy. Marks.—The high tower of Moro Castle, between the second and the third black cliffs to the westward of the south cliff at Kingsgate; a tree which stands to the eastward of Minster east mill, just touching the north side of the salt-water bathing-house, which has a middle gable, at Nayland; the west end of Birchington Wood, on with the east cliff of Westgate Bay and the North Foreland Lighthouse, bearing S.  $\frac{1}{4}$  W. a little westerly, distant  $4\frac{1}{2}$  miles.

*Directions for sailing from the Nore to the North Foreland, through the Oaze, Nob, Prince's and Queen's Cnannel.*

In sailing through the Oaze Channel steer from the Nore Light E.S.E.  $\frac{1}{4}$  S. about  $4\frac{1}{2}$  miles; the point of land above Yantlet being kept about a ship's length to the northward of the Nore Light, will take you to the entrance of the channel between the Oaze and Spile buoys. When the west buoy of the Oaze bears N. by W., an E. by S. course will carry you along the north edge of the Shivering, to a berth between the chequered buoy of the Shivering and the buoy of the Nob; proceed onwards for the buoy of the Girdler. On the western part of the Oaze Channel are from 9 to 11 fathoms; further on from 9 to 6 fathoms. In working down towards each side, stand on to 9, 8, and 6 fathoms. Keeping the lead going will secure you from danger.

Nob Channel.—When the Mouse buoy bears about N.W. and the east Oaze buoy S.W., having a depth of 6 or 7 fathoms, the Nob Channel is open; on your starboard hand leave the white buoy, and steer S.E. by S. or S.S.E. about  $2\frac{1}{2}$  miles towards the beacon buoy of the Shivering sand, passing the red buoy of the Nob on the larboard, in 6 or 7 fathoms. When abreast of the Shivering buoy steer S.S.W. with the ebb, or S.W. by S. with flood tide, about one mile; this will take you the fair-way opposite the black buoy of the Girdler. Observe, throughout the navigation of these channels, the tide is a beam tide, for which allowance must be made according to the wind and velocity of the tide.

Between the south and Girdler sands on the north, and the Tongue and Pan sands on the south, lies the Prince's Channel. Its entrance is to the southward of the Girdler buoy; from that buoy a course S.E. by E. will take you to the northward of the chequered buoy of the North Knoll. As this passage is shoal in many places, the best passage is the southward of the Knoll. The North Knoll bearing E. by N., distant near three-fourths of a mile, steer E.  $\frac{1}{4}$  S. until having passed the

buoy about 3 miles on E.S.E.  $\frac{1}{2}$  E. course for 5 miles, will take you beyond the east buoy of the Tongue; the western part is only about half a mile wide, but towards the east it widens to  $1\frac{1}{4}$  mile; the depth gradually increases from  $3\frac{1}{2}$  fathoms to 9 and 10 fathoms.

Queen's Channel.—From the buoy of the Girdler to the Beacon Buoy on the Pan sand across the flats the distance is about 3 miles; the course about S.S.E. With the ebb tide, which sets strongly to the E.N.E. with the wind to the southward of west, keep to the windward of this course. In this course are from  $2\frac{1}{2}$  to  $3\frac{1}{2}$  fathoms; to the westward the water is shoaler. With an E.S.E.  $\frac{1}{2}$  course, distant about  $2\frac{1}{2}$  miles from between the buoy of the Pan sand and the South Knoll, will bring you abreast of the white buoy on the Pan Patch, the water being from  $2\frac{1}{2}$  to 5 fathoms. The course into Queen's Channel from the Pan Patch to between the buoys of the Wedge and Tongue, E.S.E.  $\frac{1}{2}$  E. or E. by S. rather more than  $2\frac{1}{2}$  miles. To the east buoy of the Tongue, the distance is nearly 6 miles, with from 4 to 14 fathoms. After having passed the Wedge, stand towards the Tongue in 7 or 8 fathoms, and the north spit of Margate sands in 9 fathoms. There is about 11 fathoms in mid-channel, between the Tongue and the Wedge, and between the Tongue and the North spit. From the North spit buoy to the east buoy of Margate sand, the course is S.E. by E.  $\frac{1}{2}$  E. 4 miles. In Queen's Channel, from the Pan sand, are from  $2\frac{1}{2}$  to  $4\frac{1}{2}$  fathoms as far as the white buoy off the Pan Patch. Pass on either side of the South Knoll, but the most direct is on the north side.

Whilst waiting for the tide, a convenient place for anchoring is the Pan sand Hole, between the Pan sand Buoy and the Beacon on the one side and South Knoll Buoy on the other; with the South Knoll Buoy bearing S.S.E. and the Standing Beacon E. by N. to N.E. rather more than half a mile distant, anchor in 4 fathoms; except with easterly winds there is also good anchorage between the Wedge, North spit Buoys, and the Tongue. Towards the lower part of the Wedge and Tongue sands, vessels may stand in to 6 fathoms. The upper part of these sands is steep-to and close to them 9 fathoms. In standing to the southward towards the North spit Buoy, be cautious of standing into less than 9 or 10 fathoms and to the northward in 7 or 8. In mid-channel there is from 10 to 14 fathoms.

Tides.—About and within the east buoy of Margate sand, the first of the flood current sets S. by W. southerly; the middle of the stream sets west, and the last N.N.W. and N. by W. The first of the ebb sets N.E., the middle S.E. and S.E. by E., and the last of it south, and S. by E. But between the east buoy and the shoal part of Margate Sand, the first of the flood sets due south, the middle S.W., and the last N.N.W. and N. by W. The first of the ebb sets N.N.E., the middle E.S.E., and the last S. by E. and south.

Between the North Foreland and the Kentish Knock, the setting of the tide is extremely irregular; so much so that frequently, in the course of half a tide, the stream will set to every point of the compass. In these circular currents, or large whirlpools, the fishermen have sometimes found their nets coiled up, in the most curious manner, and too often rendered useless; and, as the whirls are not stationary, they have it not in their power to avoid them, when driving off the Foreland.

In the Queen's Channel, the tide flows on the full and change at 12, spring-tides rise 15, and neaps from 7 to 8 feet. The velocity of the first is about  $2\frac{1}{2}$  knots, and of the latter only one knot. Off the Foreland the strength is considerably less.

At Margate it flows at  $11\frac{1}{2}$ , and at the Reculver at  $11\frac{1}{2}$ ; but the flood continues to run until 12, spring-tides rise about 17 feet. In Margate Roads and at the Hook of the sand they run with a velocity of about  $2\frac{1}{2}$  knots; but near the shore the

stream is weak. A great indraught sets into the East Swale, which influences the stream on the Flats. The flood here sets W. by S.

In the Five Fathom Channel it flows at 12; spring tides rise here 15, and neaps about 9 feet.

### SECTION III.

#### MARGATE ROADS TO THE SOUTH FORELAND, INCLUDING THE DOWNS.

From Margate Roads to the Downs, ships outward bound must give Longnose a good berth; a ledge of rocks stretching northward two-thirds of a mile from Foreness, and which is partially uncovered at low ebbs. In sailing towards the Gull stream, keep Birchington Church open of the east cliff of Margate, or Birchington seed mill open of Ledge Point, until the North Foreland Lighthouse bears S.S.W.  $\frac{1}{4}$  W. : a course from thence S.S.E.  $\frac{1}{2}$  E. will lead to the entrance of Gull Stream.

The different points from Foreness to Ramsgate succeed each other as follows :— At S.E. by S., nine-tenths of a mile from Foreness, are Neptune's Point and Tower, (also called Whiteness,) forming the north side of Kingsgate Cove; thence at three-tenths of a mile S.  $\frac{1}{4}$  E., is Hackendown Point, the south side of the cove, with the Moro Castle and Ice-house. From Hackendown Point, S.  $\frac{1}{4}$  E. four-tenths of a mile, stands the pitch of the North Foreland; thence S.S.W.  $\frac{1}{4}$  W. one mile is the north cliff of Broadstairs, followed by its little pier and cove, and distinguished on each side, at the entrance, by a beacon. This is only one-eighth of a mile broad to the opposite side. From the latter, the cliff winds south-westward one mile and seven-tenths nearly to Albion-place and to the east pier of Ramsgate Harbour.

The harbour of Broadstairs is formed by its wooden pier, about 100 yards in length, extending from the northern side of a cove. The entrance faces the S.W., but the harbour is much exposed to the sea, which is driven in by winds from the eastward. At spring-tides there is about 16 feet of water at the pier-head, and 10 at neaps, but the harbour is dry at low water, and, during spring-tides, nearly 100 yards outside the pier is left uncovered.

The North Foreland Lighthouse is a white tower, of which the lantern is 340 feet above the level of high water; the light, brilliant and fixed, may be seen six or seven leagues off.

The Goodwin Sands are extensive and dry in several places, they are divided in the middle by a narrow swashway, which runs S.E. and N.W. The Northern Goodwin is about 3 miles long, and  $2\frac{1}{2}$  broad. The N.W. edge is steep-to and dries, having a narrow ridge running along it called the West Dyke; this terminates at the Trinity Swashway. On the southern side of this swash is the Fork, a sandy spit, which extends S.W. by W.  $8\frac{1}{4}$  mile, where a chequered black and white buoy is placed; that part of the spit which is nearest the swash dries, and is named the Bunt Head. From off the N.E. part of the dyke a large dry patch begins, and bends circularly to the eastward, forming the northern and eastern edges of the Goodwin.

By a notice issued from the Trinity House, dated the 16th November, 1832, it

appears that the Northern Goodwin has extended to the northward since the last survey was taken; and, moreover, that a knoll of 9 feet at low water has been formed, lying much in the way of vessels passing into, and out of the Gull Stream. Near the western edge of this knoll, a buoy, striped red and white, has been laid down in 4 fathoms, at low water, spring tides, with the following marks and compass-bearings, viz., St. Peter's Church Tower, on with the highest windmill at Broadstairs, bearing N.W.  $\frac{1}{2}$  N.; Southwood House on with the obelisk on Ramsgate Pier, N.W. by W.  $\frac{1}{4}$  W.; North Foreland Lighthouse N.N.W.  $\frac{1}{4}$  W.; Gull buoy N.W., and the Gull Light-vessel W.S.W. southerly.

The Southern Goodwin is separated from the East Dyke by a channel, with 6, 7, 8, and 9 fathoms, called the Gulf, it runs N.W. into Trinity Bay; the dry sand called the Barrier forms the S.E. boundary of the Gulf, S.W. by W. from the Barrier, three-quarters of a mile is a long forked patch, which also dries, called the North and South Callipers. From the Gulf to the South Sand-head the distance is nearly 7 miles.

The Goodwin Floating-light lies E. by N.  $\frac{1}{2}$  N. about one mile from the nearest part of the North Sand-head. To distinguish it from the two Foreland Light-houses, three distinct lights are exhibited in such a manner, that the middle one appears considerably higher than the two extreme lights, forming an erect triangle. In foggy or hazy weather, a gong is constantly sounded, to warn ships that they are near the North Sand-head. The situation of this light renders it impossible for any vessel to get upon the North Sand-head, or any part of the Goodwin, if proper attention be paid to the following directions:—

1st.—The grand intention of this light being to keep vessels to the eastward of the Goodwin, those coming from the North Sea towards the Strait of Dover must not bring it to bear more southerly than S.S.W., but should always keep the light rather to the westward than southward or eastward of that bearing, while they are to the northward of it; they will then pass far enough to the eastward of it, and every part of the Goodwin, by steering a S. by W. course after they have passed the light.

2ndly.—Vessels coming from the Strait of Dover toward the North Sea, must not shape a northerly course until the light bears N. by E., but they should keep the light rather to the northward of that bearing than to the eastward of it, while they are to the southward of it; and they will then pass far enough to the eastward of it, and every part of the Goodwin.

3rdly.—Should any vessel, coming from the North Sea towards Dover Straits, be prevented, by necessity, on account of wind or tide, from proceeding to the southward at the back of the Goodwin, or to the eastward thereof; you may, by a single bearing of the Goodwin Light, anchor under the North Sand-head, in 6 or 7 fathoms of water, clean ground, and ride there as safely as the Light-vessel. In order to which keep to the northward of the light; and, when it bears about south, near half a mile distant, you may anchor. Or, should getting into the westward of the Goodwin be preferred, so as to have the Gull Stream open, vessels may run in to the northward of the Goodwin upon a N.W. course, about  $2\frac{1}{2}$  or 3 miles within, or to the N.W. of the light, and anchor in 7 or 8 fathoms, the light bearing S.E. from the vessel.

The course through the Gull Stream lies between the Brake and several other sands on the west, and Goodwin sands on the east; buoys are laid down on each side of it. A small shoal lies on the west side called the Elbow; on its N.E. extremity is laid a white buoy, at the distance of  $2\frac{1}{4}$  miles from the North Foreland

Lighthouse, bearing from it S.E. by E.; also the tower of St. Lawrence's Church W.  $\frac{1}{4}$  S. about a ship's length to the right of Dumpton point, which is on the right of Dumpton stairs. A spit extends S.E. by E. one-third of a mile from the south end of the elbow; over the inner side the depth is  $4\frac{1}{2}$ , and the outside 6 fathoms. A shoal, called the Boiler, within the Elbow, lies to the N.W. having 3 or 4 fathoms, and another called the Caldron, lies half a mile W. by N. from the Elbow buoy. Between these buoys is a depth of 5 to 6 fathoms.

About a mile and a quarter from the North Foreland Lighthouse, and a mile N.W. by W. from the buoy of the Elbow, lies Broadstairs Knoll: it is about one and a half cable's length, having  $2\frac{1}{2}$  fathoms on it at low water. The marks for it are, a small hut, near the public house at Kingsgate, just open with the Ice-house point, bearing N.N.W.  $\frac{1}{4}$  W.; the west corner of a remarkable square field, which is a little to the northward of a stone house, a handspike length to the westward of St. Peter's Church, and Broadstairs windmill on with the chimney of the middlemost house on Crowhill bearing about W.  $\frac{1}{4}$  N.

Two patches lie within Broadstairs Knoll, called the Fox and Goose, with  $2\frac{1}{2}$  and  $3\frac{1}{2}$  fathoms; small vessels pass between these and Broadstairs Knoll. There are several others to the southward, upon the flat which extends to Ramsgate; one of them is the Thistle, on which is a black buoy in eleven feet water. Vessels drawing 9 feet water should pass to the eastward of this buoy at low water.

The Gull lies  $2\frac{1}{4}$  miles S.S.W. from the Elbow, on the same side of the Gull Stream. It stretches S.E. and N.W. one mile; on one part is only 17 feet water, but vessels may pass over the eastern end in  $4\frac{1}{2}$  fathoms. On the N.E. side of the shoalest part is a white buoy, with Jacob's Ladder, at Ramsgate, half-way between the two mills west of the west pier; the flag-staff of Dover Castle on with that of Deal Castle, the North Foreland Lighthouse N. by W.  $\frac{1}{4}$  W.

A narrow sand, called the North Bar, lies nearly parallel with the Gull at the distance of three-quarters of a mile, to the southward of which is another called the Middle Bar; on the former the water is 4 fathoms.

The Break is an extensive bank, and lies to the westward of the last-named banks. A red buoy distinguishes the N.E. part, and is situated W.  $\frac{1}{4}$  N. from the white buoy on the Gull, at the distance of a mile and a quarter. The marks for it are St. Lawrence Church on with the north cliff point of Ramsgate N.W. by N.; the cupola of Woodnesboro' Church on with that of St. Peter's at Sandwich, and the North Foreland Light N. by E. northerly. The sand extends from this buoy to a black one with a staff and ball, which lies on the southern extremity about  $4\frac{1}{2}$  miles. On some parts of this sand the depth of water is only 1 fathom, the broadest part is only half a mile wide.

The South Brake buoy is black, with staff and ball, and denotes the southern extremity of the Brake. It lies in 5 fathoms on the outer part of a knoll at the tail of the Brake, with the North Foreland Light-house N. by E.  $\frac{1}{4}$  E.; the Gull Light-vessel E.N.E.; the Fork buoy S.E.; the South Foreland high Light-house, on the middle of the cliff northward of Old Stairs Bay, S.W.  $\frac{1}{4}$  W.; and Ramsgate Pier Light-house its length on the chancel of the New Church N.  $\frac{1}{4}$  E. Vessels when nearing this buoy from the Gull Stream should not bring it to bear to the southward of S.W., and should never attempt to cross the sand to the northward of it.

On the eastern edge of the Brake Sand, at nearly midway between the north and south Brake buoys, a chequered red and white buoy has been placed in 5 fathoms, with the North Foreland Light-house bearing N. by E.  $\frac{1}{4}$  E.; the Gull Light-vessel S.E.  $\frac{1}{4}$  S.; the North Brake buoy N.N.E.  $\frac{1}{4}$  E.; and Ramsgate Pier Light-house on Sackett's Library N.  $\frac{1}{2}$  W.

Having passed through the Gull Stream for the Downs, the marks for anchoring with a large ship are, the South Foreland High Lighthouse on with the middle of Old Stairs Bay, and Upper Deal Mill on with Deal Castle, in 7, 8, or 9 fathoms, good holding clay ground; moor with your best bower southward, so as to have an open hawse with southerly winds. If you are in the Downs in the night-time, and the wind blows so hard from the S.S.E. or S., that you part from your anchors, you must endeavour to bring the South Foreland High Light to bear S.W.  $\frac{1}{2}$  W. and steer N.E.  $\frac{1}{2}$  E.; this course will carry you out through the Gull Stream, between the Brake and the Goodwin; be careful to keep your lead going, as before directed, and, when you are advanced so far to the northward as to bring the North Foreland Light to bear N.W. by N., you may steer E.S.E. or E., which will carry you clear of the North Sand Head and Light Vessel. You will have no more than 6 or 7 fathoms on the flat, off the Foreland; but when you deepen your water to 18 or 20 fathoms you will be outside of all the sands, and may steer either to the northward or to the southward as occasion shall require. Small vessels drawing less than 16 feet water may proceed through the Inner Channel, as before directed.

Deal Bank, of which coasters and small vessels must be very cautious, lies off Deal Town, about half a mile from the shore, and has in one part no more than 12 feet on it.

There was formerly a red buoy placed near the eastern projection of this bank, but, by a Trinity-house Notice, dated 7th February, 1837, it appears that it has been removed to the northern extremity of the Sand, and that a red buoy has also been placed near to its southern end.

The North Buoy lies in 5 fathoms, with Upper Deal Mill on with the north end of Deal Hospital, bearing W. by S.  $\frac{1}{4}$  S.; the Telegraph on Cornhill, in a line with the south end of the north cliff of Old Stairs Bay S.W.  $\frac{1}{4}$  S.; and Sandown Castle N.W.  $\frac{1}{4}$  N.

The South Buoy lies in  $4\frac{1}{2}$  fathoms, with Deal Hospital Clock Cupola twice its apparent breadth open to the southward of Deal South Mill, N.W. by W.; and Ringwold Church, just open to the southward of Walmer Castle, W.S.W.  $\frac{1}{4}$  W.

Small Downs.—The Small Downs is that space which is between the south end of the Brake and the shore, extending about two miles from Sandown Castle towards Ramsgate. In it there is good anchoring from 6 to  $2\frac{1}{2}$  fathoms. The best marks for anchoring are, the Bullock Sand Hill, which stands about two miles to the northward of Sandown Castle, appearing between the two churches of Sandwich, or with Deal Mill and Sandown Castle in one, or St Margaret's Church on with the small mill to the northward of Deal.

To the northward of the Small Downs, between the Brake and Ramsgate, lies the Inner or Ramsgate Channel; for navigating which the following directions have been given by the Harbour Trust at Ramsgate.

Ramsgate.—It being of importance that ships should not run for Ramsgate Harbour when it is low water, the following rules must be observed. A red flag will be hoisted upon the Cliff, near Jacob's Ladder, in the day-time, when there are 10 feet water between the Pier Heads; and, in the night, a light in the light-house upon the west pier will be lighted, when there is the same water; and they will respectively be continued until the water falls to 10 feet.

The lights in the windows, at Ramsgate Town, having been frequently mistaken for the harbour light on the pier-head; shades of red-coloured glass have been fixed to the latter, so that the lantern now produces a clear and distinct red light, by which such mistakes will in future be prevented.

The following notice has lately been issued by the Trinity-house :—

**Royal Harbour of Ramsgate.**—Notice is hereby given, that the light-house of this harbour is now rebuilt; in consequence of which the temporary light lately exhibited will be removed, and a red light will be exhibited from the new light-house at the usual times of tide, on and after the 10th instant.

“The lantern is elevated on the west pier, 37 feet above high water mark, spring tides.

“**N.B.**—Masters of vessels using Ramsgate Channel, (commonly called Cudd's Channel,) in the night-time, are cautioned to keep the light open to the westward of the Two Guide Lights on the west cliff, which are placed to the westward of all the gas lights of the town; and, further, to notice that these two small lights kept in one will lead through Cudd's Channel in the best water, towards the harbour's mouth.

“**Royal Harbour of Ramsgate Office, 22, Austin Friars, London; July 1843.**”

It is high water, full and change, in the harbour, at 20 minutes after 11. At 20 minutes after 9 in the morning the tide begins to set N.E., and so continues 5 hours and 25 minutes. On the moon's quarters it is high water about 20 minutes after 4. At about one hour after the 10-feet signal is made, there will be 16 feet water, with spring tides between the pier-heads; two hours after, or at high water, about 20 feet. With neap-tides, one hour after the 10-feet signal is made, there will be 12 feet; two hours after, or at high water, 15 feet.

To sail in from off Sandown Castle steer about mid-way between the shore and the Brake, keeping St. Lawrence's Church about a ship's length open to the eastward of West Cliff Lodge, a white house, which stands on the cliff between Pegwell White Cliff and Ramsgate, bearing N.  $\frac{1}{4}$  E. for about 4 miles, until you bring Woodnesboro', or Wednesbury Church (in the country) in a line with St. Clement's Church at Sandwich, which is the southernmost of the two churches in that town; you will then be as far as the Rattler Shoal, near which is placed a white buoy, and will have the light-house coming on with the highest house on the east cliff of Ramsgate, commonly called the Duchess's House; keeping these in one will lead you up to a red buoy, which lies W.S.W. from the light house, distant three-quarters of a mile, in 6 $\frac{1}{2}$  feet at low water. Pass close on the outside of this buoy, and steer directly for the west pier head; taking care to keep within the transporting black buoy, placed just without the entrance of the harbour.

In approaching the harbour, if the tide sets to the eastward, keep a good sail on the ship, and steer close to the west pier head, (you cannot be too close,) and if you cannot conveniently make fast to one of the buoys within the harbour, throw all your sails aback, and let go your anchor; or if you have no anchors, run on the East Bank, directly towards the Pier House; you will then be under the direction of the Harbour Master, who will order you into a proper berth.

**N. B.** The best time to enter Ramsgate Harbour (if the vessel does not draw too much water,) is two hours before high water, or when the tide begins to set to the N. E. outside of the Pier Heads.

A boat and men are appointed by the Harbour Trust, to attend ships coming into the harbour, without expense; they in general make a rope fast to bring you up, and then leave you, if there are many ships coming in; but if not, they will assist you further.

Directions for Sailing towards the Harbour in the Night, which is only to be attempted by vessels of burthen in cases of extreme necessity :—

All Captains of ships in the Downs, in bad weather, should know their exact



situation before dark, by intersected bearings of Sandown Castle and the Half-way Houses, and consequently their bearings and distance from the point where the white buoy within the Rattler is placed. They should also keep a good look-out for, and note the time when, the 10-foot signal is made.

If vessels part their anchors, or are obliged to cut from them, they must steer, by their bearings obtained before night, such course as will bring them to the white buoy when the western reflector of the light, on the west pier head, will bear N.E. by N. by compass, (the only guide in the night :) keeping the light on these bearings will bring you to the west pier head, when you must enter in the manner before directed.

N.B.—If the tide be running to the eastward, you must take particular care not to let the light get to the northward of N.E. by N. till you almost touch the pier head, or the tide will certainly set you to the eastward, past the entrance. It is hoped that no vessel will cut, or run for Ramsgate Harbour, in the night-time, unless in case of real distress; lest, by doing so, she run into greater danger, with a view to avoid only a temporary gale, which perseverance and good ground tackle might have enabled her to ride out, at least till day-light. But the safest way, in the night, is to run out for the Gull Stream, by bringing the South Foreland High Light to bear S.W.  $\frac{1}{2}$  W. till you come abreast of the Gull Stream Light, keeping her on your starboard side; then steer N.E.  $\frac{1}{4}$  N. until you bring the Goodwin Light Vessel to bear about S.E. in 7 or 8 fathoms water. You may then anchor, or bring-to, for the night.

There is an inner Channel or Passage to Ramsgate, leading to the northward of the Brake; this is only fit for small vessels, being much encumbered with shoals; the situations of which will be best understood by an inspection of the Chart. There are two channels, one called the Cliff's End Channel, and the other the Lighthouse Channel; neither of them ought to be attempted by any person not well acquainted with them.

The shoals, which bound these Channels, are the Rattler, Bramble, Cross Ledge, Cracker, Race, Rat, Quern, Dike, Nut, Cob, and Coburn; some of which have only 4 feet over them.

The Lighthouse Channel is a narrow channel situated between the Quern and the Dike, and chiefly used by those bound to Ramsgate from the northward; to sail through this passage, bring Ramsgate Pier Lighthouse its breadth open to the right of West Cliff Lodge Stables, or West Cliff Lodge its own length on the advanced pier head; this will lead from the southward of the Gull to the north-eastward of the north or red buoy of the Brake, the Nut and Quern; the least water in this channel will be 9 feet.

The Cliff's End Channel lies between the Quern and Cracker, and to the southward of the buoy of the Brake; to sail through this passage you must bring the northern clump of trees, near Bedlam Farm, on with the Cliff's End White Point, keeping the house itself well open of the Point, when abreast of the Quern; but when abreast of the Cracker, take care to shut the house more, or bring it quite on with the Cliff's End. When the North Foreland Light is directly on with the North Cliff of Broadstairs, you will be to the north-eastward of the Quern; the thwart-mark for the south end of which is St. Lawrence's Mill on with the North Cliff of Ramsgate; and with the top of St. Peter's Church a handspike's length above the land, you will be clear of the Dike.

Ships in the Downs, when bound to the westward with southerly winds, should weigh at slack water, and cast their heads towards the shore. In turning out of the

Downs, great care must be taken to avoid those sands which lie in the way; stand no nearer to Deal Bank than 7 fathoms, nor into less than 13 or 12 fathoms off the pitch of the Foreland. Stand towards the Goodwin Sand, into 12 fathoms, until Ringswould Church comes on with the Old wall to the northward of Kingsdown; then tack when in 14 fathoms, as the Goodwin is, from thence to the South Sand Head, steep-to.

The marks to carry you clear of the South Sand Head are Upper Deal Mill open a ship's length to the southward of Walmer Castle, about midway between it and the first cliff, or Folkstone Church a little to the left of Shakespeare's Cliff. Upper Deal Church in one with Walmer Castle, will carry you a full mile to the southward of the sand, in 13 or 14 fathoms. In the night, keep the South Foreland Lights in one, bearing W. by N. northerly. Between the South Sand Head and the South Foreland, you will have from 10 to 15 fathoms; the deepest water is nearest to the Foreland. At the South Sand Head, Shakespeare's Cliff appears just as much to the left of the South Foreland, as the higher light appears to the right of it. But the best guide is the Light Vessel.

To sail to the northward of the North Sand Head bring St. Peter's Church Tower a little open to the right of Broadstairs Mill, and in the night-time stand no nearer than to bring the North Foreland Light N.W. by N. nor come into less than 8 or 7 fathoms.

The floating light-vessel off the south head of the Goodwin Sand lies in 13 fathoms, exhibiting a single light. The mark for her is the west end of the trees in Admiral Harvey's Park, at Walmer, on with the centre of Walmer Castle, N.N.W.; the South Foreland upper Light-house W.  $\frac{1}{2}$  N., and the Gull Light-vessel N.N.E.  $\frac{1}{4}$  E.

The Gull Stream Light-Vessel, already mentioned, is moored off that part of the Goodwin called the Trinity Swash. It is painted red, with the word Gull on each side. In this vessel two lights are shown every night from sun-set to sun-rise, for the purpose of guiding ships, and all other vessels, in the night, through the Gull-stream, to and from the anchorage in the Downs. The vessel in which these lights are exhibited is moored in 8 fathoms of water, with the following marks and bearings, viz.

St. Lawrence's Mill on the left part of Albion-place, Ramsgate, and also on the New Warehouses to the westward of the Ramsgate Trust Committee Room, N. by W.  $\frac{1}{4}$  W.

The South Foreland high-light on with Old Parker's Cap, bearing nearly S. W. by W. distant 9 miles; the North Foreland Light, N.  $\frac{1}{4}$  E. distant  $6\frac{1}{2}$  miles; the North Sand Head (or Goodwin) Light, E. N. E.  $\frac{1}{4}$  E. distant  $4\frac{1}{2}$  miles; the South Brake buoy, W. S. W.  $\frac{1}{2}$  W.; the Fork buoy S. W.  $\frac{1}{2}$  S.; the Gull buoy, N. E. by N.; and the North Brake buoy, N.  $\frac{1}{4}$  E., in a line with the North Foreland Light.

Beacon on the Goodwin.—A safety beacon on the Goodwin, six miles to the eastward of Deal, and about three quarters of a mile within the eastern edge of the bank, was erected in the year 1840, for the preservation of persons shipwrecked, as shown by chart. Its utility is unquestionable, and we hope that it will continue to stand, as a monument to the honor of those by whom it has been constructed. This beacon, erected under the direction of Captain Bullock, R.N., consists of a mast about 40 feet high above the level of the sea, having cleats and ropes attached to four of its sides, with holds for hands and feet. At the summit of the mast is attached a gallery of octagon form, capable of holding twenty persons at one time. Above the gallery, and in continuation of the mast, is a flag-staff 10 feet long,

thus making the entire beacon 50 feet in height. The sides of the gallery are so constructed as to enable the persons in it to be covered in with sail-cloth, which may be reefed in and round it, and can be used at pleasure; as also an awning to pass over it, which is fixed to the flag-staff; thus entirely protecting any unfortunate mariner who may seek shelter on the beacon from foul and tempestuous weather. A barrel of fresh water, together with a painted bag enclosing a flag of distress, is to be stationed in the gallery, and the words "hoist the flag," painted in different languages, on boards stationed round the inner part of the gallery, so that the foreigner as well as the native seaman may be enabled to show a signal of distress, and obtain help from shore.

The shaft is 12 inches in diameter; it is sunk 5 feet into the sand, and secured at its base by a strong oaken frame, having on it a pressure of three tons of iron ballast, and upward by four pairs of iron chain stays, &c. as described in the Nautical Magazine of Dec. 1840.

The flag is blue, and to be hoisted only when assistance is required. The topmast is kept struck, in order to give the beacon the appearance of a wreck, and as a warning to those unacquainted with its uses.

Hereabouts the sands are dry to a considerable extent, for several hours of the tide, and present a fine tract of level ground.

A Warning Beacon, for direction, is placed upon the eastern spit of the Goodwin, which forms the South point of the passage leading from the eastward into Trinity Swash, on the western side of the sands.

At the North Foreland, it is high water, on the full and change, at a quarter past 11, and the tide rises about 10 feet; at Ramsgate, as already noticed, it flows at 20 minutes after 11; at Deal, nearly at the same time. At Ramsgate, spring-tides rise above 18, and neaps, 12 feet. At the South Foreland it flows at 5 minutes past 11. The stream in the Downs, however, continues to run until half-past two o'clock, and the flood runs nearly for six hours and three-quarters. Strong N.E. winds sometimes keep back the tide more than an hour, and southerly winds the contrary. At Dover the time is 10h 50m. At Folkestone, 10h 45m. Here springs rise 15, and neaps, 9 feet.

To the E. S. E. about 3 miles from the North Foreland, during the first half flood upon the shore, the stream sets S.S.W., and soon after it is slack water; after which it sets West, N.N.W., and N.W., until half-ebb. So that the ebb-tide, out of Margate Road, runs three hours to the eastward before the tide of ebb runs to the southward through the Downs; from this reason, if a ship be in Margate Roads, with a wind at S.W., sail should not be made to beat and go round the Foreland, until half-ebb, when the tide will be going to windward through the Gull-stream. Spring-tides run about a mile and a half in an hour; neaps about half a mile. When low water slack begins off the Foreland in a gale of wind, the tide frequently sets in all points of the compass.

At Ramsgate the flowing tide very seldom continues more than five hours, and sometimes scarcely so much. It is nearly the same at Dover.

## SECTION IV.

DOVER STRAIT, AND COAST FROM THE SOUTH FORELAND,  
TO BEACHEY HEAD.

The Channel navigation for large ships is very much straitened in the vicinity of Dungeness by banks of sand and shingle, the principal and most dangerous of which are the Ridge, the Varne, the eastern Vergoyer, and the Banc de Basse, as during equinoctial tides  $8\frac{1}{2}$  feet only will be found upon the former shoal, nor is there at the same time more than 16 and 17 feet on the three latter; on the western Vergoyer 27 feet will be found.

The Varne and Ridge lie exactly in the fair-way of the Strait of Dover, at nearly equal distances from the English and French coasts, and nearly parallel to each other. The Varne is  $5\frac{1}{2}$  miles in length, and  $1\frac{1}{2}$  in breadth. The Ridge is 9 miles in length, and 2 in breadth where broadest. Neither of these banks are continuous, but consist of shoal patches, having deep water between them. The north-east end of the Varne bears S.  $18^{\circ}$  E. (S.  $\frac{1}{2}$  W.,) from Dover Castle distant  $8\frac{1}{2}$  miles, and S.  $4^{\circ}$  E., (S. by W.  $\frac{1}{4}$  W.,) from the South Foreland upper Light-house, distant  $8\frac{1}{2}$  miles. The south-west end of the Varne lies, S.  $8^{\circ}$  W., (S.S.W.  $\frac{1}{4}$  W.,) from Dover Castle distant  $11\frac{1}{2}$  miles, and S.  $36^{\circ}$  E. (S. by E.,) from Beechborough Summer-house distant 12 miles. The marks for the centre and shoalest part of the Varne are the Fir-trees at Paddlesworth\* twice their own breadth open to the eastward of Folkstone Church, and the Guard-house on Cape Blancnez exactly in one with the top of the Chalk Cliff beneath it, S.  $77^{\circ}$  E., (S.E.  $\frac{1}{4}$  E.) The Fir-trees at Paddlesworth in one with the middlemost of the three Mortella Towers which stand to the eastward of Folkstone, N.  $56^{\circ}$  W., (N.N.W.  $\frac{1}{4}$  W.,) will lead to the eastward of the Varne; Lymne windmill, just in sight to the westward of Lymne Church, N.  $47^{\circ}$  W., (N.N.W.,) will carry you to the westward of it; and the mill on Fairlight Down 'one-third nearer to Lydd Church than to Dungeness light-house will lead between it and the English coast.

The Ridge (or le Colbart) is situated 3 miles to the south-eastward of the Varne, and there are 16 and 22 fathoms between them. On its north-eastern end there are from 4 to 10 fathoms, on the centre of it 2 to 5 fathoms, and towards the south-western end thereof as little as  $8\frac{1}{2}$  feet will be found. This is the shoalest part of the bank, and lies S.  $71^{\circ}$  W. (W.  $\frac{1}{2}$  N.,) from Cape Blancnez distant 17 miles, S.  $3^{\circ}$  W. (S.S.W.  $\frac{1}{2}$  W.,) from Dover Castle distant 18 miles, and N.  $61^{\circ}$  W. (N.W.  $\frac{1}{4}$  N.,) from Montlambert Semaphore distant 15 miles. From hence Playden Steeple is its own breadth open to the southward of Dungeness Light-house, and the remarkable conical hill in the interior, near Audembert, appears a little open to the southward of the Mortar Battery on Cape Grinez. The mark for the north-eastern end of the Ridge is the trees at Paddlesworth, twice their own breadth open to the eastward of Folkstone Church; and for the south-western end of this shoal, the Semaphore on Montlambert a little open to the northward of the Hotel de Ville, in the upper town of Boulogne. By keeping Montlambert and the Church in one you will pass to the southward of the Ridge, and to the northward of Boulogne Middle; and Walmer-road Mill in sight to the eastward of the Hope Land, or the Church of

\* The clump of trees at Paddlesworth is very conspicuous; they are close and compact, and show the same in all directions from the sea.

Outreau touching the eastern end of the Wood which stands to the south-westward of St. Etienne Church, will lead to the eastward of the Ridge.

The bank called Boulogne Middle lies S. 10° W., (S.S.W.  $\frac{1}{2}$  W.), from Dover Castle distant 24 miles, and N. 85° W., (N.W. by W.  $\frac{1}{2}$  W.), from Montlambert distant 13 miles; it has 24 feet water upon it, with Lydd Church and Dungeness light-house in one, N. 50° W., (N.N.W.  $\frac{1}{2}$  W.)

The Western Vergoyer bears S. 77° W., (W. by N.), from Montlambert distant 20 miles, and S. 30° W. S.S.W.  $\frac{1}{2}$  W., from the Fir-trees at Paddlesworth distant 29 miles; there are from 4 $\frac{1}{2}$  to 10 fathoms on this bank. Cape Blancnez Signal-house its own breadth open to the northward of the pitch of Cape Grinez, N. 57° E., (E.  $\frac{1}{2}$  N.), clears Boulogne Middle and the Western Vergoyer to the northward. Montlambert Semaphore just open to the southward of the Guard-house, on Cape Alprec, N. 72° E., (E.  $\frac{1}{2}$  S.), clears the Western Vergoyer to the southward; and New Romney Church open to the westward of Dungeness light-house the apparent length of the light-house, N. 12° W., (N. by E.), clears it to the westward.

The Eastern Vergoyer lies between the Western Vergoyer and Banc de Basse, and is 4 $\frac{1}{2}$  leagues in length, though not more than 2 $\frac{1}{2}$  miles in breadth. The shoalest part thereof, 18 feet, is near the north-east end, and the mark for it is the Church of Outreau in one with the Semaphore on Montlambert: on each side of this shoal the water is very deep. Lydd Church in sight to the southward of Dungeness Light-house N.N.W., clears it to the north-eastward, and Boulogne Middle to the south-westward; and Montlambert midway between Outreau Church and Alprec Guardhouse E.  $\frac{1}{2}$  S., clears it to the northward.

The Banc de Basse is a long narrow bank of sand and shells, extending from abreast of Ambleteuse in a south-west direction, nearly 11 leagues; the shoalest part of it, a patch of 18 feet, is abreast of Fort la Creche. There are two conspicuous mills upon the heights within Point Alprec; and the north-western of these mills in one with the village of Portel will carry you to the southward of the above patch, over the bank, in 24 feet water, while the south-eastern mill open to the westward of the north-western mill, will lead to the northward thereof in 25 feet water; on other parts of this bank there are 4, 6, and 8 fathoms, with deep water on each side of it.

The Ten-fathoms Bank consists of two patches of sandy grounds, 10 $\frac{1}{2}$  miles in a S. b. E.  $\frac{1}{2}$  E. direction from Dungeness Light-house, and is merely alluded to here to account for the great overfalls which exist on them in bad weather. Lydd north-east mill, midway between Lydd Church and Dungeness Lighthouse, is the mark for the centre of the bank. When beating up or down Channel in thick weather, between Dungeness and the South Foreland, do not go into less water, when standing in, than 14 fathoms, which will keep you to the southward of the banks near Dungeness and of the rocks off Folkstone. Between half flood and half-ebb you may stand freely off, as there is not less water than 20 feet, during that period, even on the Ridge; but after half-ebb all ships should endeavour to keep between the Varne and the English coast.

Dover is a good tide harbour, about 3 miles from the South Foreland W.  $\frac{1}{2}$  S.; the channel lies in a N.N.W. direction. It has two piers, the east and west. Upon the latter are two flag-staffs: on the largest of these, by day, a red flag is hoisted when there are 10 or more feet water at the entrance. During the night, on the same pier, two red lights are shown when there is the same depth of water. The upper light may be seen at the distance of 3 or 4 leagues.

Spring tides rise from 18 to 19 feet; neaps from 12 to 13 feet. The harbour

dries at low water, for at spring tides the depth is only from 17 to 18 feet. The entrance into the harbour, between the piers, is 110 feet, and is open to the S.S.E.

During south-westerly gales, vessels experience difficulty in entering, from the heavy sea to which the harbour's mouth is exposed; and another obstacle arises from the shingle bar, which winds from this quarter throw up across the entrance, and which at times has rendered the harbour inaccessible for several weeks together.—*Report of the Admiralty Commissioners, 1840.*

In consequence of a counter current, which sets right across the harbour mouth, from the last quarter of flood till the end of the first quarter of ebb, great caution should be used in entering during a gale of wind. To anchor in Dover Roads, bring St. James's Church in the valley, which has a flat steeple, N.N.W., and the South Foreland nearly E.N.E., on the white way, to the N.W. of the Castle, directly over the hill, or between the hill and the church. You may anchor in from 7 to 14 fathoms.

Folkestone lies W.  $\frac{1}{4}$  S. from Dover, distant about 5 miles. Off Folkestone is good anchorage in from 12 to 14 fathoms; but near it and to the westward are several dangerous shoals and ledges of rocks, some extending half a mile from shore: you may avoid them by not approaching within 12 fathoms, or keeping the South Foreland open of Dover Cliff. A tide light is on the larboard side, when lighted indicating at least 9 feet water.

Folkestone dries at low water. On the bar, at high spring tides, the water is from 10 to 14 feet; neaps, from 8 to 11 feet.

According to the Report of the Admiralty Commissioners, 1840, Folkestone Harbour, entirely artificial, is formed by rubble stone piers, and encloses an area of 14 acres. The western arm extends in a S.S.W. direction, 140 yards across the beach, and is united with the main pier, which is carried in a straight line E. by S. about 317 yards. A projecting pier has since been run out from the shore, on the eastern side, 236 yards toward the S.W., leaving an entrance of 123 feet in width open to E. by S.

The rise of spring tides averages about 18 to 20 feet, and neap tides from 12 to 14 feet. The greater part of the interior is blocked up by a bank of shingle rising to the height of several feet above high water, and leaving only a channel of inconsiderable width along the side of the main pier.

This harbour has lately been purchased by the South Eastern Railway Company, who will most probably improve it much, having already established a line of steam packets to Boulogne, and are making arrangements to receive coal vessels.

Dungeness is about 13 miles from Folkestone and 20 miles from the the South Foreland; is a low steep beach, with a good lighthouse, which has a fixed light, and may, in clear weather, be seen at the distance of 5 leagues. Ships may pass round this point in from 9 to 12 fathoms.

The west bay of Dungeness affords good anchorage against north-easterly winds, and is certainly preferable to Dover Road. Two red lights are now exhibited on Dover western pier-head, or a flag in the day-time, as long as there are 10 feet water in the entrance. The marks for the best ground are, New Romney Church Tower in one with Lydd Church, and the mill on Fairlight Down in one with, or open to, the westward of Fairlight Church. From hence Dungeness Light will bear E.  $\frac{1}{4}$  S., and a depth of 6 fathoms may always be secured. Smaller vessels may run in farther towards the beach, guarding always against a sudden shift of wind. Dungeness Point is steep-to: 10 or 12 fathoms will be found within a cable's length of the beach.

The Roar and Swallow Banks lie in the east bay of Dungeness; the first is contiguous to the beach, and takes its rise at the Ness Point, running in the direction of the coast as far as Folkstone, and shoaling out to the eastward, between these limits, to the distance of 2 miles from high water mark. On that part of the Roar nearest to Folkstone there are from 12 to 14 feet water; abreast of Dymchurch and New Romney, and from thence along the land towards the light-house, the depths vary from 6 to 18 feet, and there are 5 fathoms all along its eastern edge. The Swallow is detached: it is nearly in the form of a pear, and has from 16 to 20 feet upon it: it lies three miles from Dungeness Point, in the direction of N.E.  $\frac{1}{4}$  E., and the same distance from New Romney Church. By keeping Lydd Church in one with, or open to, the northward of Lydd North-east Mill you will pass to the northward of the Swallow; and Beechborough Summer-house in one with Hythe Church will lead very considerably to the eastward of it; at two hours flood, however, there are 21 feet water upon this shoal. When the wind is between N. by E. and W. by S. the Eastern Bay affords good shelter to vessels of all classes, in from 4 to 12 fathoms, and upon pretty good holding ground. The best position for anchoring is with Lydd Church open to the northward of Lydd North-east Mill, and the light-house bearing S.W. by W.  $\frac{1}{4}$  W., in 7 fathoms water.

Rye Harbour lies about 8 miles from Dungeness. It has two lights of unequal height; when lighted indicate 9 feet water at the entrance. Keeping both in one lead you into the harbour: when entering leave them on the starboard hand.

From Rye about six miles is Haddock Cliff and the high land of Fairlight; between which and Beachey Head the coast is composed of coarse shingle, with small rocks interspersed. To the westward of Fairlight is the town of Hastings, with the villages of Bexhill, Pevensey, Eastbourne, &c. Hastings is situated at the foot of a range of hills which slope gradually down to the sea. The town is divided by the river Bourne. Two lights, one red one white, are exhibited at Hastings, from March 25th to September 29th, principally for the use of the fishermen.

About 18 miles from Haddock is the promontory of Beachey Head. It is rendered remarkable by the uniformity of its cliffs, seven in number. There is an excellent revolving light on a spot called Belle-toute, near the summit of the second cliff to the westward of Beachey Head. It is 285 feet above high water, and its interval of greatest brilliancy is two minutes.

Caverns in the Cliff.—By order of the Committee and Subscribers at Lloyd's, in 1822, six caverns, with entrances three feet wide, and flights of steps 20 feet in height, terminating in an apartment 8 feet square, have been cut in the cliffs between Beachey Head and Cuckmore Haven, and the place called Darby's Cave repaired; by which means, those who may be unfortunately wrecked on that part of the coast, may now find a safe place of refuge where many have heretofore been lost.

At the South Foreland the tide, on full and change, flows as already noticed. At Dover the time is 10 hours 50 min., at Folkstone 10 hours 45 min., at Dungeness 10 hours 30 min., in Rye Harbour 10 hours 36 min., and at Beachey Head 10 hours 16 min. The vertical rise is nearly as follows:—At Dover and Folkstone, springs 15, neaps 9 feet; at Dungeness, springs 24, neaps 15 feet; on the Ridge and at Hastings, springs 22, neaps 14 feet.

Between Beachey Head and Fairlight the flood continues to run eastward until 12 o'clock, and to the westward of Dungeness, near Dungeness Shoal, until half-past one. Three leagues off Dungeness, and at the same distance from the South

Foreland, the stream continues to run to the eastward until three quarters past two, and toward the opposite coast until three o'clock.

The great branch of tide which flows up the English Channel meets the North Sea tide nearly abreast of Dungeness, where the tide from the North Sea runs an hour longer than the channel stream. For it is to be remarked that, four hours before the flood from the northward has ceased to run at Dungeness, the ebb tide to the westward begins to run down the channel.

### *Shoals between Dungeness and Beachey Head.*

One mile and two-thirds from Dungeness Lighthouse, in the direction of W.  $\frac{1}{4}$  N., lies the eastern end of a bank usually called Stephenson Shoal; it thence extends in a south-west direction for nearly 2 miles. There are from 17 to 24 feet upon it, and 6 and 7 fathoms all around it. Shakespeare Cliff open to the southward of the lighthouse, or Fairlight Mill in sight to the westward of Fairlight Church, will carry you well to the southward thereof; and the tower of New Romney Church, open to the westward of Lydd-smock Mill, will lead considerably to the westward of it.

The Boulder Bank, which lies to the south-eastward of Cliffsend Point, is in length nearly 3 miles and in breadth three-quarters of a mile, and has generally 11 and 12 feet water upon it, with 3 and 4 fathoms all round it. Fairlight Mill open to the westward of the Semaphore will carry you to the south-westward of the bank, and Playden Steeple in one with the turret of Rye Church will lead considerably to the south-eastward of it. This bank, however, lies so close to the shore as to be entirely out of the way of vessels running or beating up or down the Channel.

Eastward of Fairlight Down, and between it and Hythe, is situated that extensive level tract of land called Romney Marsh, upon the south-east point of which stands Dungeness Light-house, which is coloured red, and is in all respects very conspicuous.

The course from any position off Beachey Head to a corresponding position off Dungeness is E.  $\frac{1}{4}$  S., and the distance 29 miles. The ground between them is, generally speaking, shoal as well as flat; nevertheless the depths from the offing towards the shore decrease so regularly, that the land to the westward of Dungeness may be made with safety in the thickest weather by the lead.

With the town of Battle in one with that of Bexhill, about N.N.E., a ship will be to the eastward of all the shoals, and may steer E.  $\frac{1}{4}$  N. for Dungeness. If bound westward from off Dungeness, she should not steer to the westward of W.  $\frac{3}{4}$  S. before she sees Beachy Lighthouse or Seaford Cliff. The south-western end of Holywell bank lies two-thirds of a mile from the Watchhouse on Beachy Head, and it thence extends continuously in a north-east direction for nearly 2 miles, running parallel with the trend of the coast, and terminating abreast of Rockyfoot Point; there are 4 and 6 feet on all parts of this bank, and 12 feet very close both within and without. The little spire of Hurstmonceaux Church in one with the western part of Westham Church will carry you between the Holywell Bank and Royal Sovereign Shoals.

The centre of the Royal Sovereign Shoals, on which there are only 9 feet water in many places, lies E.S.E.  $\frac{1}{4}$  E. from Beachy Head distant  $6\frac{1}{2}$  miles, S.W. by W., from Fairlight Mill distant  $10\frac{1}{4}$  miles, and S. by E.  $\frac{1}{4}$  E. from Pevensey Church, distant  $5\frac{1}{2}$  miles. The long north-eastern mark for it is Fairlight Mill in one with the eastern part of the cliff on which the ruins of Hastings Castle stand, and



Hailsham Church one-third nearer to Westham Church than to Hankham Windmill. By keeping Seaford Cliff in sight to the southward of the pitch of Beachey Head you will pass at least 2 miles to the southward of these dangerous shoals. At night, vessels coming from the eastward will open Beachey Light to the southward of the cliffs of Beachey Head, when it bears N.W.  $\frac{1}{4}$  W.; and whether bound up or down channel, when to the eastward of Beachey Head, and within 3 leagues of it, by keeping the light open they will pass half a mile to the southward of all the Royal Sovereign Shoals.—Trinity House Notice. Fairlight Mill in one with the north-western part of the cliff eastward of Hastings will lead to the eastward of them; and Willingdon Church on with the north end of Willingdon Chalkpit will carry you to the northward of them. These shoals are very perceptible during spring tides, and in bad weather the sea breaks heavily upon them. About  $1\frac{1}{4}$  mile to the southward of the centre of the Royal Sovereign Shoals there is another or outer shoal of about a cables' length over, called the Horse of Willingdon, or Outer Horse, the least water on which is 4 fathoms. It bears from the Telegraph on Beachy Head S.E. by E. nearly, distance  $6\frac{1}{4}$  miles, and from Pevensy Church S.  $\frac{1}{2}$  E. a little easterly. Near its southern edge there are 6, 7, and 8 fathoms, and between it and the Royal Sovereign Shoals from 6 to  $9\frac{1}{2}$  fathoms.

Between the meridians of Shoreham (two lights are shown at New Shoreham,) and Beachey Head the soundings very gradually shoalen from the offing toward the land, and you may anchor all along the coast with off-shore winds in from 2 to 9 fathoms water; but the anchorage of most general resort is that of Seaford Roads, abreast of the village of that name, in 8 or 9 fathoms, with the church bearing E.  $\frac{1}{2}$  N.; bottom, fine dark sand and mixed with marl. From this anchorage the pitch of Beachy Head will afford shelter with the wind as far southerly as E.S.E., and is, therefore, superior to the western bay of Dungeness. Seaford Head is often mistaken for Beachy Head by vessels coming up channel within 4 or 5 miles of the land; they may be distinguished by there being a small building on the highest part of Beachy Head, whereas there is nothing on the former.

There are no dangers to be feared between the Owers and Beachy Head, save what are close to the shore; of these the Bogner and Shelly Rocks, Felpham Ledges, &c., are the principal. The former lie nearly 5 miles to the eastward of Selsea Bill, and project  $2\frac{1}{2}$  miles to seaward. The Shelly Rocks are somewhat farther to the south-eastward, and are marked by a white buoy; and there is a small patch farther to the eastward, and abreast of Little Hampton, called Winter Knob, from the name of the skilful pilot by whom it was discovered. It lies  $1\frac{1}{4}$  miles from the shore, with Leominster Church in one with Climping Mill, N.E.  $\frac{1}{4}$  N. The whole, however, of these may be avoided, by keeping the high land in the vicinity of the Priory, on the Isle of Wight, open to the southward of Selsea Bill.

---

## SECTION V.

### . BEACHEY HEAD TO SPITHEAD AND PORTSMOUTH HARBOUR.

Newhaven lies nearly 8 miles from Beachey Head, and is considered the best harbour between the Downs and Isle of Wight.

The harbour, (which is managed by trustees,) is formed in the channel of the

River Ouse, at its entrance into the sea, by wooden piers carried out in a southerly direction across the beach. The river is navigable as far as the town of Lewes, and open to the flow and ebb of the tide for four miles farther up the stream, or twelve miles altogether, and affords a powerful back water for scouring the entrance.

The average rise of spring tides, at the harbour mouth, is from 19 to 20 feet, and of neap tides about 14 to 15 feet. The bar, however, is left dry at low water spring tide, but within the piers is about two feet of water at such times, and this depth continues uniform for a mile up the channel.

The distance between the pier-heads is only 106 feet; on the western side of the harbour, the wooden pier, which extends about 250 yards, has been continued inward by a stone embankment, nearly three-quarters of a mile, in a straight line; and the Bar, which formerly extended from the western side nearly across the mouth of the harbour, has been considerably reduced since the completion of this work, the extension of the eastern pier, and other improvements which have of late been made in straightening and deepening the river above the town.

During the flood tide and fine weather the harbour is easy of access, from the indraught and eddy-tide which set toward the mouth; but from the rapidity of the stream during the ebb, it is not considered safe for a sailing-vessel to enter, and the flag at the pier-head is in consequence lowered at a high water.—Report of the Admiralty Commissioners, in 1840, suggesting further improvements.

The Bay of Newhaven is between Seaford on the east and the Burrow Cliff on the west. The piers that form the harbour are 120 feet from each other. Between them, at low water spring tides, there is only 2 feet, at high water springs, from 20 to 22 feet; at high water neaps 14 feet. At the mouth of the harbour the ground is shifting. The Bay is one of the finest roadsteads in the channel, with the wind from N.N.W. to E. by S.

Official Description.—Newhaven Harbour, on the coast of Sussex, in lat.  $50^{\circ} 47'$  N. and long.  $0^{\circ} 3'$  E. from the meridian of the Royal Observatory at Greenwich, is a safe and good harbour for ships of a certain tonnage to trade to, or take shelter in, when in distress of weather; having, upon a mean spring tide within the piers, twenty feet of water, and upon a neap 12 feet. The piers bear N.W. by compass, W.N.W.  $\frac{1}{4}$  W. true, eight miles from Beachy Head; and E. by S. by compass, or E. by N.  $\frac{1}{4}$  N. true, twenty-nine miles from the Owers light, and about fifty-four miles, on the same bearing, from St. Catharine's Point, in the Isle of Wight. There is good anchorage in the bay, from south to east of the piers, true bearings; soundings having been carefully taken at a cable's length from each other.

There are two lights on the west pier-head, on a traversing bar, which are used eight months in the year, from the 1st of September to the 1st of May, inclusive; these are lighted from dusk of evening, and continue burning until day-light in the morning, and lead in when kept in one vertical line. The in-shore light is six feet higher than the other. One red buoy and two white buoys, on the eastern side of the channel, lead into the harbour, keeping two black buoys on the west.

Brighton lies 14 miles from Beachey Head Lighthouse. About the centre is a suspension chain pier, which extends from high water mark 1,100 feet, and 580 feet from low water mark. At high water, at its extremity, is 23 feet, and 5 feet at low spring tides. At the outer end of the pier is a green-coloured light. The gas-lights of the town form a very conspicuous appearance at night, and may be seen very well at the distance of 6 miles.

New Shoreham Harbour is 19 miles N.W.  $\frac{1}{2}$  W. from Beachey Head, and 18 miles E. by N. from the Ower's Light-ship. It has two light-houses, which, kept in a line, lead in between the piers. The lower light-house is 27 feet above the level of high water spring tides; the higher light is 1,100 feet behind the lower light, and is 50 feet above the level of high water, and may be seen at the distance of 8 miles. A red flag will be hoisted on a flagstaff, on the top of the low lighthouse, by day, as soon as there are 11 feet water into safety, and will remain so hoisted until near high water, when it will be hauled half-staff down, that being the proper time for vessels to run for the harbour; and not till then should ships attempt to enter, unless they are well acquainted. By night the low light will be first shown at high water slack, or at the same time of tide that the flag would be struck half-mast by day, and continue to be exhibited only until the ebb tide has made strong out of the harbour. The mark for making the harbour is, the outer Eastern Dolphin on with the flag-staff at the Custom-house, and not the two lights in one as heretofore, on account of the bar having lately shifted. To go to the westward of the Jenny Ground Rocks, bring Portslade mill on with the houses in Copperas Gap.

A white light is shown at night on the middle pier, when there is 11 feet water between the piers, and a red light at the same situation when it is high water, slack tide.

It is high water at the east pier-head, on full and change days, at 20 minutes past 11 o'clock; mean spring-tides rise about 14 feet. On quarter days it is high water at 4 o'clock, and mean neap tides rise about 9 feet. In blowing weather, by night, when pilots cannot get off, vessels should keep their light hoisted, until they get into the harbour and a pilot on board.

About  $2\frac{1}{2}$  miles to the westward of Brighton is a ledge of rocks, extending about three-quarters of a mile from shore, called the Jenny Ground Rocks, which will take vessels of ten feet water up at the last quarter ebb. This may be avoided by keeping Lancing Mill open to the southward of Shoreham Church: and by night, by going into no less than 5 fathoms, until the high light at the harbour bears N.N.W. Shoreham Church is about a mile to the westward of the pier; it has a square tower, and its roof appears white: it may be seen at some distance. Coming from the westward, after passing Worthing Point, it will appear on the east side of a deep valley. Ships may anchor in any part off Shoreham harbour, in from 4 to 7 fathoms at low water, on stiff blue clay and mud.

It is to be observed, that the ebb tide sets strongly to the westward, in-shore, nearly two hours before it is high water at the pier-head, so that ships with westerly winds may avail themselves of it to get to the westward, by making short tacks near the shore. The flood near the shore makes to the eastward, before low water in like manner.

Little Hampton is situated at the mouth of the river Arun, leading up to Arundel. The bar has  $11\frac{1}{2}$  feet water at ordinary spring tides, but in strong west winds the rise is to 13 or 14 feet. There are two piers, one on each side. When the weather will not permit pilots to put off, a man attends on the east pier to waive the vessel in, and a pilot-boat attends between the piers to board her as soon as she gets within the breakers.

A signal-staff is placed on the quay, on which flags are hoisted to denote the depth of water on the bar, viz., a white flag, hoisted half-mast, is 8 feet on the bar; white flag, with the union under, is 9 feet; the union flag 10 feet; the union, and blue pennant under it, 11 feet; the blue pennant 12; and the blue pennant, with

the union under it, 13 feet. When the flags are hoisted to the top of the signal-post they denote half a foot more. By night a light is sometimes shown on the mast. It is high water at full and change at the pier head at 11 o'clock.

The Owers Rocks lie to the southward of the pitch of Selsea Bill, and form an almost continuous though irregular ledge, resembling the letter S. The south-eastern extremity of these rocks is called the Elbow, and is distant from the Bill  $5\frac{1}{2}$  miles, having from 4 to 24 feet on different parts of it. The western extreme is called the Brake or Cross Ledge, with similar depths of water. The Owers are very extensive as well as dangerous, and will be best comprehended by consulting the chart. The White Road-way on Bow Hill in sight to the eastward of the Spire of Chichester Cathedral (at which time the Spire will be in one also with Stoke Chalk-pit) will carry you at least one mile to the eastward of the north-eastern and eastern extremities of the Owers, and in from 6 to 9 fathoms water; and the Spire of Chichester Cathedral open to the westward of Medmerry Barn, the apparent breadth of the said barn, will carry you one cable's length to the westward of the western and south-western extremities thereof, in from 4 to 8 fathoms water.

A vessel, with a single light, is stationed off the eastern end of the Owers, bearing from the Elbow N.E.  $\frac{1}{2}$  E., and distant five-sixths of a mile. The Owers Light-vessel is painted red and has three masts. At night she carries a single light at the main, 26 feet high, and, during the day, a ball. In foggy weather a gong is sounded every ten minutes. When a vessel is seen standing into danger a gun is fired. The foul ground in the neighbourhood of the Eastborough Head has extended itself one mile to the south-eastward since Lieut. Murray's survey was made in 1807. All vessels, therefore, navigating in the vicinity of the Elbow of the Owers should be cautious not to approach the light nearer than two miles, when to the southward thereof, and not to bring the light more to the eastward than N.E.  $\frac{1}{2}$  N, until they have passed the south-easternmost extreme of the Elbow, from whence, if bound to Spithead, the light should, on no account, be brought to bear more southerly than E. by S. by compass, until clear of the Pullar and Boulder Banks, the latter of which lies about 6 miles from the Elbow, in the direction of N.W.  $\frac{1}{2}$  W. In the vicinity of the Owers the streams of both ebb and flood set with great velocity to the north-eastward and north-westward, eight hours in the latter direction, and four in the former, which in light winds or thick weather should be cautiously provided for. According, however, to the former survey of Lieut. Murdoch M'Kenzie, the stream of ebb in the Looe makes to the westward about ten o'clock at full and change, or about  $1\frac{1}{2}$  hours before high water by the shore in Selsea Harbour; and the stream of flood makes to the eastward about four, or about the same time before low water there. Spring tides in the Looe run about three knots, and neaps about two; but in the Park, and along the shore of Selsea, the velocity of the tide is inconsiderable, except just at Selsea Bill, where it is pretty strong; nor does it turn at the same time as in the Looe, but nearly with half tide on the shore. There is an anchorage in what is called the Park, between the Owers and the land, though a very indifferent one, in from 3 to 4 fathoms water, the best position for which is upon the following marks:—Halifax House in one with Selsea Church, and Semi, on the Isle of Wight, just in sight to the southward of Culver Cliff: the latter is also the leading mark for the Looe stream. The above anchorage is  $2\frac{1}{4}$  miles to the eastward of the Mixon, and  $1\frac{1}{2}$  miles to the north-westward of Eastborough Head. It is, however, by no means to be resorted to unless in cases of emergency, nor while any prospect remains of gaining an offing or of reaching Spithead or the Downs. Ashley Down Tower

shut in with the north side of Brading Down will lead you to the southward of all danger in the vicinity of the Owers.

Captain Mingaye, R.N., who has had much experience on this part of the coast, is of opinion that the Park is a most valuable anchorage for the coasting trade. Vessels are sheltered from S. by W. to E. by N.; the gravel bottom, though rather rough for the cable, thinly covers a strong clay. There is good room for working out if the wind veers to the eastward; and, if possible to wait till an hour after the western tide has made, there will be 12 feet water close to Selsea Bill, between which and the Mixon the stream sweeps with great rapidity.—Hydrog. Office.

The soundings between the Isle of Wight and Cherbourg, with reference to the Channel fair-way, are so irregular, that the course for a running ship cannot be designated with that degree of precision which the narrow limits of the Channel there require; at the same time, these transitions from deep to shoal water will be equally in favour of a working ship, or of one crossing the channel. The general quality of the bottom to the southward of the fair-way is coarse, loose, unconnected, or rocky; the stones are in general covered with a reddish incrustation. Within the distance of 5 leagues of the coast of Hampshire and Sussex the soundings become finer, being chiefly sand mixed with fine gravel, which continues as far eastward as Beachy Head. The course from any position off St. Catherine's Point to a corresponding position off Beachy Head is E.S.E.  $\frac{1}{4}$  E., and the distance 60 miles.

To facilitate the passage of vessels through the Looe stream, the Trinity-house have published the following notices:

“A buoy, with a staff and ball, has been placed half a mile to the eastward of the rocks on the East Barrow Head, near a small sand-bank, on which there are no more than  $2\frac{1}{2}$  fathoms at low water, spring tides; and at the north end of it, where the buoy is placed,  $4\frac{1}{2}$  fathoms, with the following marks and bearings: namely,—

“The Owers Light-vessel bearing S.W. by S. about  $1\frac{1}{2}$  mile; the Luff (a clump of trees on a distant hill) a sail's-breadth open to the north of Middleton Church, bearing N.E. by N.; Pagham Church on a grove of trees in one, bearing N. by W.; Selsea Bill, N.W.; and the beacon on the Mixon, N.W.  $\frac{1}{4}$  W.

“After passing the buoy to the northward, the course by compass to the entrance of the Looe stream is W.N.W.; great care must be taken not to come to the westward of the buoy till you are well to the northward of it.

“And, in January, 1830, a buoy, striped longitudinally black and white, with a black cross painted on its head, was placed in five fathoms, on the east end of the middle ground (being the continuation of the Pullar bank, and on the western side of the swashway of the Owers), with Chichester spire a ship's length open to the eastward of Selsea corner N. by E. easterly; the Luff, a clump of trees above-mentioned, in one with Felpham church tower, N.E.  $\frac{1}{4}$  E.; the Owers Light-vessel S.E. by E.”

Brake or Cross Ledge.—The channel over the Brake, or Cross Ledge, is now distinguished by two buoys; the outer one red, with a staff and ball, and the inner chequered black and white. The first or outer buoy lies to the N.E. of the Nock, or Boulder Bank, on the edge of the Cross Ledge, in two fathoms, with Chichester spire on a grove of trees to the westward of Selsea Bill in one, bearing N.E. by N.; the inner, or chequered buoy, N.E.  $\frac{3}{4}$  E. seven-eighths of a mile; the Beacon on the Mixon, E. by N. a mile and three-fourths; and the Owers light S.E.  $\frac{1}{4}$  E. five miles and two-thirds.

The chequered buoy lies about half a cable's length to the southward of the West Heads or Dries of the Mixon, in two fathoms; and the marks for it are, Rook's Windmill, on with the high house of Selsea, bearing N.N.E.  $\frac{1}{4}$  E.; the Luff in one with Selsea Bill, E.N.E.; and the Mixon Beacon E.  $\frac{1}{4}$  S. about one mile.

The course to the eastward through the Looe stream, between the buoys, is E. by S.; and, when over the Cross Ledge, on which there are only two fathoms, at low ebbs, you will not have less than four and a half fathoms at low water, all through to the eastward, clear of the rocks on either side.

From the west end of the Boulder Bank, the south-east buoy of the Dean bears N.W.  $\frac{1}{4}$  N.  $7\frac{1}{2}$  miles. This bank should not be approached on its south side nearer than 11 fathoms. Culver Cliff will then bear about W.S.W. The mark for clearing the Boulder Bank to the westward is the Roadway up Rook's Hill (a little to the eastward of the windmill) on with Chichester Cathedral Spire, bearing N.E.  $\frac{1}{4}$  N., or, if Rook's Hill or the Roadway be obscured by haze, Chichester Cathedral Spire in one with the west end of Medmerry Barn, which are nearly on the same bearing.

From half a mile south-westward of the Boulder Bank the direct course between the Dean and Warner sands is N.W.; but, in approaching the south-east part of Dean, if the buoy is not seen, keep Ashey Down Tower in one with St. Helens sea-mark, or the largest chalk-pit on Brading Down twice its breadth open southward of St. Helens sea-mark, either of which will clear the Dean to the southward; and the windmill on Portsdown Hill opening westward of Cumberland Fort will lead to the westward of it. Then bring Kickergill on with the middle of the Barracks in Fort Monkton and proceed to Spithead. The S.E. buoy of the Dean is black, and lies in 27 feet water,  $3\frac{1}{2}$  miles S.  $\frac{1}{4}$  W. from Cumberland Fort; its marks are Portsdown Mill in one with the highest buildings in Cumberland Fort, N.  $\frac{1}{4}$  E.; and the westernmost chalk-pit on Brading Down in one with St. Helens sea-mark, West.

The S.E. end of a narrow shoal called Medmerry Bank lies W.  $\frac{1}{4}$  N. from the extremity of Selsea Bill, extending about one mile in a N. by W. direction, having, near the S.E. end, only  $2\frac{1}{2}$  fathoms. This part lies with the S.W. part of Portsdown Chalk Pit, on with the S.W. end of Hayling Trees; also, Lord Kinnaid's House, near Slindow, just open to the westward of Medmerry Farm House. On the other parts of the bank the depth is from 3 to 4 fathoms.

The entrance to Chichester Harbour lies 6 miles N.N.W.  $\frac{1}{4}$  W. from Selsea Bill. The channel lies between two shifting banks called the East and West Poles. The eastern one extends half a league from shore, with S.W. by W. direction. In sailing for the bar keep Portsdown Windmill on with South Sea House; Rook's Windmill on with the chimney head on the N.W. gable of the Custom House Watch-house, is then the best mark for sailing over the bar. Vessels sailing in this direction will not have less than  $4\frac{1}{2}$  feet at low water spring tides. In the west deep of the harbour, vessels may anchor in 5, 6, and 7 fathoms.

### *The Channel to Spithead.*

The usual passage into Spithead from the eastward is between the Dean and Horse Sands, on the north-eastern side, and several shoals which lie off the Isle of Wight, on the western side. The Dean is an extensive flat that shoals gradually from 20 feet on its outer edge to the shore: it runs out 3 miles when opposite Cumberland Fort, and extends  $2\frac{1}{2}$  miles from its outer extremity to its inner buoy, called the Horse, in a north-westerly direction, whence it bends round to N.  $\frac{1}{4}$  E.,

and, at the distance of about 2 miles, joins the shore near South Sea Castle. Off its S.E. point is a rocky patch, on which a black buoy is placed, called Horse Tail, or outer buoy of the Dean.

The Princessa shoal is  $\frac{1}{2}$  of a mile in length from S.E. to N.W., and  $\frac{1}{4}$  of a mile N.E. to S.W., having but 20 feet water upon it, and rocky patches. Care should be taken with a large ship to avoid it at low water or with a heavy sea.

Bunbridge and Betty ledges run off from Bunbridge point.

The Nab is a small rock with 19 feet water over it, but having 5 to 6 fathoms close to it.

The Long Rock lies about two-thirds of a mile to the N.W. of the Nab, and has  $22\frac{1}{2}$  feet over it. To avoid, open Porchester Castle to the eastward of South Sea Castle and Dunnose open of Bunbridge point.

St. Helens Patch lies nearly 2 miles N. by W.  $\frac{1}{4}$  W. from the Nab rock, and S.E. by E. from Nettlestone point, distant one mile and two-thirds; it is a small shoal with  $3\frac{1}{2}$  fathoms.

The Warner has only 14 feet on it, but 12 fathoms on the east side, at one-third cable's length from the buoy, with regular soundings on the west side from 3 to 5 fathoms: it is nearly one-third of a mile in length from N.N.W. to S.S.E.

Noman's Land is the N.E. part of the shoal ground running off Nettlestone Point towards the Horse. It is steep-to, having 14 fathoms close to the northern edge.

Ride Sand is a continuation of Noman's Land, from Nettlestone Point to Ride, and still further westward within the Mother Bank. A buoy, chequered red and white, is placed on its eastern edge, which you leave on your larboard hand, when running in from St. Helena.

Sturbridge Bank is the next danger, lying to the north-westward of Noman's Land, about one mile and two-thirds, and one-third of a mile from Ride Sand; this land lies from N.W. to S.E., is very narrow, and about three-quarters of a mile long; it has a white buoy at each end, with 15 feet water over the shoalest part.

The Mother Bank is the last shoal; the eastern end lies between the island and the Sturbridge Bank, continuing from thence to the westward, joining the shore at Old Castle or East Cowes Point; on its eastern extremity is 2 fathoms, and along its edge from 2 to  $2\frac{1}{2}$  fathoms.

Besides these there is the New Grounds, lying to the north-eastward of the Nab rock, distant about half a mile; at low spring tides the shoalest water is  $4\frac{1}{2}$  fathoms.

### *Description of the Buoys, &c., with their Marks, in entering Spithead.*

Upon the Dean and Horse there are five black buoys in succession, which must be left on your starboard hand in going in.

The Outer or S.E. Buoy of the Dean lies in 27 feet water, sandy bottom, S.  $\frac{1}{4}$  W., distant  $3\frac{1}{2}$  miles from Cumberland Fort, N.W.  $\frac{1}{4}$  W. from the Boulder Bank, distant  $7\frac{1}{2}$  miles. The marks for it are, Chichester Church Spire nearly on with the belfry of West Wittering Church, E.N.E.  $\frac{1}{4}$  E., (this church is situated on the east side of Chichester harbour); Cumberland Fort flagstaff a little open to the left of Ports-down mill, or the latter on with the east end of the barracks, bearing N.  $\frac{1}{4}$  E., and the high land of Dunnose on, or nearly on, with the Culver Cliff, bearing W.S.W.; and St. Helen's Mark on with the east end of the largest chalk-pit on Brading Downs.

The second is called Middle Dean Buoy; from the outer buoy W.N.W. three-quarters of a mile, and has 27 feet of water over it. The high white tower on the distant land to the northward of Portsdown Hill on with Mr. Clerk Jervoise's summer-house; and Ashey Down Tower on with the middle of the southmost of the two clumps of trees at priory-house on the island W.S.W.  $\frac{1}{2}$  S.

Inner Dean Buoy is the third, nearly three-quarters of a mile N.W.  $\frac{1}{4}$  W. from the middle buoy, gravelly bottom, in 26 feet water. The marks are, Clerk Jervoise's Folly on with the S.E. angle of Cumberland Fort, bearing N.N.E.  $\frac{1}{4}$  E.; the cupola of the New Storehouse Clock in Portsmouth Yard on with the S.W. corner of the Turf-redoubt, which is a little to the eastward of South Sea Castle, bearing N. by W.; and the windmill on Portsdown Hill on with the west part of Eastnee Fort, bearing N. by E.  $\frac{1}{4}$  E.

Elbow Buoy is the fourth, lying in 27 feet water, gravelly bottom. Marks:—The cupola on the new storehouse clock on the dock yard, is on with the round stone sentry box on the most southern bastion of South Sea Castle.

The Horse Buoy is the fifth, a little more than half a mile from the Elbow Buoy, N. by W.  $\frac{1}{4}$  W., in 20 feet water, sandy bottom. The marks are,—The westernmost of the two public houses on Portsdown-hill, standing on the side of the London-road, in one with the eastern extremity of Lump's Fort, bearing N.N.E.  $\frac{1}{2}$  E.; Kickergill Tower open with the point of the N.E. angle of Monkton Fort, bearing N.N.W.  $\frac{1}{4}$  W.; and Ashey Down Tower on with the S.W. angle of a triangular field, near the shore, westward of Nettlestone Point, W.S.W.

The Princessa Shoal has two buoys. At the S.E. extremity is a black one in 28 feet water, sandy bottom; the marks for which are, South Sea Castle on the eastern side of the westernmost and smallest chalk-spot on Portsdown Hill, N.  $\frac{1}{2}$  E.; a red clay cliff just open of the west side of Culver Cliff, W.N.W.; Dunnose W. by S.,  $6\frac{1}{4}$  miles; the N.W. buoy, N.W. by N. nine-tenths of a mile; St. Helen's Point just open of Bembridge Point; and the white cliff of St. Catherine's just open of Dunnose Point.

The N.W. buoy of the Princessa is white, bearing from the S.E. buoy nearly a mile N.W. by N., and lies in 31 feet water, oozy bottom. Marks,—The N.E. bastion of Sandown Castle just open to the southward of the high water mark of Culver Cliff, bearing W.  $\frac{1}{4}$  N.; Nettlestone Point upon or just open to the eastward of Bembridge Point, bearing N. by W.  $\frac{1}{4}$  W.; or, rather, the house on Nettlestone Point on with the House of Caws, the pilot on Bembridge Point.

On Betty's Ledge the buoy is black, lying in 24 feet water, gravelly bottom, distant from the N.W. buoy of the Princessa about 1 mile N.N.E. Marks,—The New Inn, (the easternmost brick house at St. Helen's) in a line with the red clay cliff within Bembridge Point, bearing N.W.  $\frac{1}{4}$  W.; the small chalk-pit, on the high land of Dunnose, just open to the southward of Culver Cliff; and the high square Tower of Porchester Castle on with the round stone Sentry Box of the southernmost bastion of South Sea Castle N.  $\frac{1}{4}$  E.

The Bembridge Light-vessel is moored off Bembridge Point, on the eastern part or flat of the Nab Rock, at the distance of 140 fathoms east from the Nab Buoy, in 4 fathoms water, with the following marks and bearings:—Nettlestone Point, N.W.  $\frac{1}{4}$  N.; St. Helens Sea Mark, N.W. by W.; Ashey Down Tower in one with the spire of Bembridge new church, W.N.W.  $\frac{1}{4}$  W.; Culver Cliff Sharp Western Edge, W.  $\frac{1}{4}$  S.; Dunnose, W.S.W. westerly; Betty's Ledge Buoy, W.  $\frac{1}{4}$  S.; N.W. Buoy of the Princessa, S.W. by W.; S.E. Buoy of the Princessa, S.S.W.; Buoy of the Warner, N.  $\frac{1}{4}$  W.



From this vessel two distinct lights are shown in separate lanterns, suspended from two masts, at 43 feet distance asunder, and at different heights; the one lantern at 25 feet, the other at 18 feet height above the vessel's deck, by which this floating light may be easily distinguished from the Owers floating light and other lights in that vicinity. In daytime a red ball is hoisted at the mast head, and, during dark and foggy weather, a gong is constantly sounded.

Long Rock lies about two-thirds of a mile from Betty's Ledge. At the shoalest part of this rock 22½ feet. The high square towers of Porchester Castle and South Sea Castle are in a line, bearing N. ½ E., and St. Helen's mark N.W. by W. westerly.

The buoy on the Warner Shoal is white, with a staff and ball, lying in 30 feet water on the east side of the shoal, fine sand, distant from the Nab Rock 2½ miles, N. ¾ W., and from the buoy on Betty's Ledge 2½ miles, N. ¾ E. Marks,—The Cupola of St. John's Chapel, its breadth open eastward of the east end of the trees on Portsmouth lines, and a large white building; St. Helens water mill, St. Helens sea mark, and St. Helens point in one.

The buoy on Noman's Land is white, lying in 31 feet water, gravelly bottom, distant one mile from the buoy of the Warner, N.W. by N. Marks:—The tower of St. John's Chapel in Portsea, N. by E. ½ E. on with the gap in the fir trees on Portsdown Hill; and Ashley Down Tower, or the N.W. angle of a triangular field, to the westward of the salthouses, bearing W.S.W.

Sturbridge Last Buoy is white, rather more than 1½ mile, N.W. ¼ W. from the buoy of Noman's Land. Marks:—The west end of the fir trees on Portsdown Hill, on with the governor's house at Haslar Hospital, N.N.E. ¾ E.; and the mill on South sea Common, nearly midway between the two beacons of the Swashway, bearing N.E. by E. easterly. On its N.W. end is another white buoy. Marks:—Nettlesome Point, S.E. by E. ½ E.; the dock yard clock cupola, on with the east end of Haslar Hospital, N.E. ½ E.; and the mill on Portsdown Hill on with the cupola of the chapel of Haslar Hospital. This buoy lies in 21 feet water, sandy bottom.

The Spit Buoy is black. Marks: the most southerly round brick sentry house in Blockhouse Battery, under the ramparts, a little to the southward of the flag-staff, twice its apparent breadth to the southward of the Sea Mark at Gosport, bearing N. by W., and two public houses, on Portsdown Hill, in one with the tower of South Sea Castle, N.E. ¼ N.

The Buoy of the Edgar is red, and lies over the wreck in 12 fathoms; is about one mile N.W. ½ W. from the Buoy of the Horse. Marks,—The S.E. angle of South Sea Castle on with the six clumps of trees on Portsdown Hill, N.E. ¼ E., and the fir garden on Portsdown Hill on with the platform flag-staff, N.N.E. This buoy lies in the fairway for Spithead.

The Buoy of the Boyne is white, and lies on the western side of the wreck, in 25 feet water. Marks:—The gap, or London-road, on Portsdown Hill, on the S.E. angle of South Sea Castle, N.E. ¼ N., and the eastern point of the trees on Portsmouth lines, on with the eastern beacon of South Sea beach, bearing N. by E.

To sail into Spithead and St. Helens from Dunnose. From abreast of Dunnose to the black or south-east buoy of the Princessa, the course and distance will be E. by N., varying according to the direction of the wind and set of the tide. Run in with Whitestone Point (the east point of Mill Bay) distinctly open to the southward of Dunnose; and, in approaching the Princessa, keep the red clay cliff, which is the next westward of Culver Cliff, open to the southward of the latter, until the westernmost Chalk-pit on Portsdown Hill opens to the eastward of the Tower of

South Sea Castle, bearing N.  $\frac{1}{2}$  E., by which marks the *Princessa* will be avoided. When the Nursery Gardens, or six Clumps of Trees, upon the eastern part of Portsdown Hill, come on with Cumberland Fort, bearing about N.N.E., run in with them in that direction, and it will carry the ship a little to the eastward of the Nab Light-vessel (this vessel exhibits two lights at different heights, on separate masts,) and over the west end of the New Grounds, in 4 fathoms at low water, and up to the line of the leading mark into Spithead, which is Kickergill Tower on with the middle of the Barracks in Fort Monkton, bearing N.N.W. When the large Chalk-pit on Portsdown Hill comes on with South Sea Castle, she will be to the westward of the Horse, and may take any berth that convenience may suggest. The limits of the best anchorage at Spithead are South Sea Castle N.E. to E. by N., and the Kicker Point N.N.W. to N.W.

In this track the ship will pass through St. Helens to the eastward of the *Princessa* Buoys, black and white, Bembridge Buoy, black, Bembridge Light-vessel, and the white buoys of the Warner and of Noman's Land, and to the westward of the five buoys of the Dean and Horse, each of which has its name painted on the head.

If it be intended to pass to the westward of Bembridge light-vessel, Nelson's Monument on with the east end of the Trees on Portsmouth Lines, bearing N.  $\frac{1}{2}$  E., will take a ship up to the leading mark into Spithead.

Ships going into St. Helens with a scant wind may pass inside the white buoy of the *Princessa*, and between the buoy of Bembridge Ledge and the light-vessel; and the best anchorage will be in 7 fathoms, with Ashey Down Tower on St. Helens Sea-mark W.  $\frac{1}{2}$  N., and the light-vessel S. by E.

If the passage between Betty's Ledge and the N.W. buoy of the *Princessa* must unavoidably be taken in a dark night, the Trinity House instructions direct as follow :—

When Culver Cliff bears north, distant from half to three quarters of a mile, you will be about  $3\frac{1}{2}$  miles from the light, in 6 or  $6\frac{1}{2}$  fathoms low water; the light then bearing E.N.E. From hence an E. by N. northerly course will carry you to the southward of the Nab Rock and Light-vessel. And when the Light-vessel bears N. by W. or N. by W.  $\frac{1}{2}$  W. you may haul up to the eastward of her for St. Helens Road. You must be very attentive to the bearings, as the tide between Betty's Ledge and the *Princessa* (on which in many parts there are not more than 19 or 20 feet) runs with a velocity that makes this channel dangerous to ships drawing much water.

Coming round the S. E. buoy of the *Princessa* from the westward, you must not haul up for the light until it bears north, when you may shape your course for St. Helens Road, and should on all occasions, if possible, pass to the eastward of the Light-vessel. The greatest attention must be paid to the time and setting of the tides.

Lieut. Mackenzie's remarks on the tides are as follow :—

On the days of new and full moon, it is high water on the shore in Chichester Harbour at about  $11\frac{1}{2}$ , and it is low water at about  $4\frac{1}{2}$ . The tide generally flows more than seven hours, but seldom ebbs more than five. On the first and last quarter days of the moon it is high water about 4, but it ebbs only till 9 on those days. Extraordinary high spring tides rise 15 and sometimes 16 feet perpendicular; ordinary spring tides about 14 feet. Neap tides rise 5 or 6, and sometimes 7 feet.

On the days of new and full moon it is high water on the shore in Selsea Harbour at about  $11\frac{1}{2}$ , and it is low water at about  $5\frac{1}{2}$ ; so that the tides here are regu-

lar, or flow and ebb about 6 hours alternately; yet they rise and fall much the same as in Chichester Harbour.

In the Looe, on the days of new and full moon, the stream of ebb makes to the westward about 10, or an hour and three-quarters before high water on the shore in Selsea Harbour; and the stream of flood makes to the eastward at about 4, or nearly the same time before low water there.

Spring tides in the Looe run about 3 knots, and neaps 2; but in the Park, and along the shore at Selsea, the velocity of the tide is inconsiderable, (excepting just at Selsea Bill, where it is rather strong,) nor does it turn at the same time as in the Looe, but about half-tide on the shore.

West of Beachy the stream of flood continues to run eastward, until three-quarters after 11.

In Langstone and Portsmouth Harbours, extraordinary high spring tides rise 18 feet, and ordinary spring tides 16 or 17 feet; neap tides rise 11 or 12 feet.

The flood runs slowly into Chichester, Langstone, and Portsmouth Harbours until the western tide sets in, then it flows fast: in all these harbours the tide flow 7 hours and ebbs little more than 5.

To the eastward of St. Helens it runs till 9½ in the morning, but it is not high water till 11h.

Through St. Helens towards Spithead it runs nearly 8 hours, which include the two last hours of the flood and the whole of the ebb.

At Spithead it runs eastward till 9½ in the morning, but it is not high water on the shore 11h. 35, when the tide is just making out of Portsmouth Harbour. At Spithead it runs to the westward 7, but to the eastward only 5 hours.

When it is high water in Portsmouth Harbour, it will be two hours ebb at Spithead, and the ebb from the harbour will set westward through Spithead.

The last quarter of the channel flood sets in round Bembridge Point and through St. Helens Road to Spithead, making the tide at Spithead run to the westward one hour and a half sooner than it does at Dunnose.

With west and south-west winds the tides commonly run longer and rise higher than usual, and with opposite winds the reverse.

*Inner Channel of the Isle of Wight, through the Needles Passage, &c., including Southampton Water and Poole Harbour.*

To the westward and southward of the Sturbridge is the Mother Bank, terminating in two spits, the inner lying within the Sturbridge, and the outer one two-thirds of a mile W.N.W. from the west end of the bank. In 3 fathoms water upon its extremity, Kickergill Tower is on with the west end of the largest Chalk-pit on Portsdown Hill, bearing nearly N.E. The bank thence extends towards Oldcastle or East Cowes point N.W. by W. about 4 miles. Near its eastern end this bank has only 2 fathoms at low water; but without its edge 7 fathoms, and between it and the Sturbridge from 5 to 9 fathoms. Merchant vessels usually anchor about this part, out of the stream of tide, with clear and good ground, sheltered from southerly winds in from 5 to 6 fathoms. There is good ground every where about here, in from 4 to 7 fathoms. Peel Buoy is white, and is placed on the north edge of the Mother Bank, 2¼ miles from the west buoy of the Sturbridge. Marks,—The Mill on Portsdown Hill on with a Mill at Brookhurst, to the westward of Gosport, and Ashley Down Tower on with the Shipbuilder's House, near Fish House, at the entrance of Wooton Creek.

Merchant vessels most frequently anchor in Stoke's Bay, which lies to the westward of Kicker or Moncton Point, the anchorage being good in from 4 to 9 fathoms, from half a mile to 2 miles from Kicker Point.

The Middle Bank lies between Stoke's Bay and East Cowes Point, 2 miles in length from N.W. by W. to S.E. by E. The lowest water is 2 fathoms, but near it on each side is 6 fathoms. At each end is a black buoy; the one at the eastern end lies in 21 feet water, South Sea Castle its breadth, on the Kicker Point, and the Mill on Portsdown Hill, on the west part of the grove called Berry or Gomer Trees; the west buoy lies in 15 feet, a large brick house near the water side at West Cowes, on with the rope house at East Cowes Point, W.  $\frac{1}{4}$  S.; and the sea mark at Ashdown open to the westward of a small patch of wood on a hill near Wooton.

To the northward, about a mile from the west end of the Middle, lies the S. E. part of a shoal called the Bramble. A white buoy is placed in 23 feet, nearly half a mile from the shoal part of the bank, having the west side of Hamble Church tower N.  $\frac{1}{4}$  W., on with Hook summer-house; the south side of the water-engine of Haslar Hospital S. E., by E.  $\frac{1}{4}$  E. just open to the northward of Kickergill Tower, and a large grove of trees in the Isle of Wight on East Cowes point. A red buoy is off the S. W. end of the Bramble, in 4 fathoms, lying with Hamble Church midway between Calshot Castle and the public-house near it, and the watch-tower at Haslar Hospital, its apparent breadth open to the northward of the house in Stoke Bay, called New Stoke's Bay House.

The Bramble has, in some parts, only 6 feet at low water, along its south edge 3 fathoms, about a ship's length off 4 fathoms, and in mid-channel 10 fathoms.

Southampton Water is on the east side of the Middle and Bramble, Calshot Castle being on the western side 7 miles from Kicker Point; should the wind be northerly stand into Stokes Bay to 3 fathoms, and off to the westward, as you please, until you get abreast of Titchfield Trees, the fair wind being S.S.W. and E.S.E. Hamble Church tower, on with Hook summer-house, leads just to the eastward of the Bramble, in  $2\frac{1}{2}$  to 3 fathoms, keeping this mark until Calshot Castle bears N.W. by N. By steering towards the castle into mid-channel, the leading mark for sailing up the river will be brought on, namely,—Freemantle House on the outer end of Southampton quay, N. by W.  $\frac{1}{4}$  W. With this mark you may sail half way up in mid-channel in 5, 6, and 7 fathoms. A commodious dock has lately been built, and the river much improved, for the accommodation of large ocean steamers.

A fixed light is shown on Calshot Castle, but of two different colours, according to your situation, with respect to it; the natural white light is seen by vessels coming from the westward when abreast of Stone Point, and about two cables' length from the shore, which will continue until abreast of the west buoy of the Bramble, when the light will become red, until to the eastward of the line of the chequered buoy of the same, and of the black Jack buoy off the castle, when the white light will again appear, and lead you clear of Cadland's Point in running up, if not shut in to the westward, the light being set to reflect only so far to the westward as the west buoy of the Bramble, and to the chequered buoy to the eastward. The Black Jack Buoy lies in 6 feet water, on the N.E. edge of Calshot spit, about a quarter of a mile from Calshot Castle is a black buoy.

The chequered buoy on the N.E. part of the Bramble with Calshot Castle, it lies N. 33° W., Stone Point N. 82° W., West Bramble Buoy N. 71° W., and the North-west Bramble Buoy S. 85° W.

A red beacon buoy is on the N.W. part of the Bramble. It lies with Calshot

Castle N.  $\frac{1}{4}$  E., Stone Point W. by N., and the West Bramble Buoy S.S.W. To the northward of the buoy is a small bank, called the Thorn, having 13 feet water, leave both on the starboard hand in going up. In mid-channel the depth is from 5 to 6 fathoms.

The usual rule for sailing from Spithead to Cowes is to run towards Stokes Bay until South-sea Castle bears E.S.E.  $\frac{1}{4}$  E., rather more than a sail's breadth open of Kicker Point. This mark leads you to the southward of the east buoy of the Middle; care must be taken, when to the westward of this buoy, not to keep Egypt Point open with Oldcastle Point for fear of getting too near the Middle shoal, but keep it alternately open and shut. When the Middle buoy bears N. by E. about  $1\frac{1}{4}$  mile leave this mark; steer N.W.  $\frac{1}{4}$  N., which will lead  $1\frac{1}{2}$  cable to the southward of the west buoy of the Middle; and, after Egypt Point bears W.  $\frac{1}{4}$  N. about  $1\frac{1}{2}$  mile, you may steer W.N.W.  $\frac{1}{2}$  W., and it will run you down abreast of that point. Cowes anchorage is N.N.W. of West Cowes, with good holding ground in from 8 to 11 fathoms.

In sailing from Spithead you may, if you prefer it, go to the northward of the Middle; shape your course N.W. from the buoy of the Royal George, which will take you to the northward of the east buoy of the Middle, leaving it about half a mile on your larboard hand; keep this course until the high square tower of South Sea Castle comes open about half the length of Moncton Fort, to the left of it bearing E.S.E.  $\frac{1}{4}$  E. This course with these marks will lead you abreast of Egypt or West Cowes Point, in the best channel. Or Portsmouth Church tower, or with four brick kilns near Stoke's Bay House, bearing E.S.E.  $\frac{1}{4}$  E., leads through the fairway between the Bramble and the Middle to a berth off Egypt Point. On the north of the Middle keep the square tower of South Sea Castle well open to the left of Moncton Fort.

The west channel of the Isle of Wight is called the Solent; the northern side is entirely mud intersected by streams leading to Beaulieu River and Lymington Creek, the entrances to which are denoted by beacons, the most remarkable called Jack in the Basket, on the west side of the gut leading to Lymington; it is a white pole, with a basket at the top, three-quarters of a mile from the shore, and  $2\frac{1}{2}$  miles from Hurst Castle. Except off West Cowes, Gurnet, and Hampstead Points, whence rocks extend about a quarter of mile, the channel is clear.

Off Gurnet Ledge is a white buoy a mile and a quarter W.  $\frac{1}{2}$  S. from Egypt Point; a black buoy on Leep Middle,  $1\frac{1}{2}$  mile from Gurnet buoy, N.N.W.  $\frac{1}{2}$  W.; and a white buoy on Hampstead Ledge  $3\frac{1}{2}$  miles W.N.W.  $\frac{1}{2}$  W. from the Leep.

There is good anchorage between Yarmouth and West Cowes. Near the Island the tide is not so strong, which it is necessary to observe, as the tide is not only strong but irregular. Yarmouth Roadstead is good, but best on the eastern side, in from 6 to 9 fathoms.

The light-houses on Hurst Beach are on a N.E. by E.  $\frac{1}{4}$  E. bearing, 755 feet asunder, and are so placed in order to be a leading mark over the Bridge, which extends from the Needles Point, and crosses it in 5 fathoms at low water spring tides. When the Needles Light bears S.E. by E. the Bridge has been passed, and ships may continue to run with the same mark, Hurst Light-houses in a line; but they must not cross that line to the westward, as it very closely skirts the eastern side of the Shingles.

There are moreover three buoys to mark this edge of the Shingles. The outermost is called the S.W. buoy, and is painted red; it carries a beacon, and lies in 5 fathoms. The cross marks for it are Nodes Beacon, on the Isle of Wight, over the

south part of the variegated cliffs in Alam Bay, where the chalk and clay cliffs join; and the Stone Beacon on Hurst Beach in one with the high light-house. This latter line passes near to the S.E. edge of the chalk rocks, and ships from the westward should therefore cautiously avoid bringing Nodes Beacon to the northward of the Needles Point till they have reached this mark of the Hurst Beacon and Light-house. In using this Channel with an ebb-tide, which sets across the Shingles, a ship should open the high light-house to the eastward of the Beacon, and afterwards to the eastward of the low light.

In working into the Needles Channel, which should not be attempted with a large vessel except in case of urgent necessity, she may reach so far westward as to bring the high light-house on with the Beacon at Hurst, until the Needles light bears E.S.E.; but higher up the Channel she must not go to the westward of the two lights in a line; and on approaching the N.E. buoy the high light must be kept open of the public-house at Hurst. In standing to the eastward, Hatherwood Point should not be approached nearer than three cables' length; and, after passing that point, the Needles Light-house must not be brought close to it till Sconce Point, on which there is a beacon or flagstaff, comes open of Round Tower Point, which latter mark will be the south-east boundary of the Channel as far up as Warden Buoy. From this buoy to Clevesend Point the island may be approached to the depth of 12 fathoms, and between Clevesend and Sconce Points to two cables length or less.

There is no occasion to give here the minute marks for the Warden Ledge; but if the buoy should have broken adrift, do not bring the Needles Light-house to the eastward of Hatherwood Point: this mark will also avoid both horns of the Tinker Ledge.

After passing Sconce Point vessels may select an anchoring berth off South Yarmouth, or proceed to the eastward.

Christchurch Harbour is a shoal bar-harbour fit for small vessels at high water. In the bay to the eastward is good anchorage in 4 or 5 fathoms,  $1\frac{1}{2}$  to 2 miles from the shore.

A reef extends from Christchurch Head, on the extremity of which, at low water, is from  $3\frac{1}{2}$  to 4 fathoms; it reaches  $2\frac{1}{2}$  miles S.S.E.  $\frac{1}{4}$  E. There is some foul ground outside the harbour on the north side. When Christchurch Tower is just open to the westward of Warren Summer-house, standing on the western part of Christchurch Headland, you will be clear to the westward of the ledge. You are well to the eastward of the ledge with Christchurch Town N.N.W.  $\frac{1}{4}$  W. well open to the right of Christchurch Head. In Christchurch Road there is good anchorage in 3 fathoms, within the ledge.

The Dolphin Bank lies near the Shingles, to the westward of the chalk-rocks. A shoal is on the western part of this bank W.  $\frac{1}{4}$  N. 2 miles, having from 3 to 5 fathoms. The channel to Christchurch Bay is between this shoal and Christchurch Ledge, the leading mark being Hurst Castle E.  $\frac{1}{4}$  S. in a line with West Cowes Point.

In Studland Bay there is good anchorage in from 4 to 6 fathoms; but large ships should not anchor further in than to have Durlston Point just open of Old Harry Point; small vessels may go further in and be better sheltered. In easterly gales there is good anchorage for vessels drawing less than 12 feet water, close in and abreast of the Middle three yards or upright pillars in the cliff with Old Harry S.S.E.  $\frac{1}{4}$  E. In westerly gales the bay affords good shelter.

Poole Harbour is about  $12\frac{1}{2}$  miles from the Needles Point W.N.W. and  $1\frac{1}{4}$  mile

from Old Harry Point N. by E. On the bar is generally 6 or 7 feet at low water and 15 feet at high water, ordinary spring tides. On the point of land which forms the northern entrance of the channel is placed a black buoy, leave this on your starboard hand; the passage is pointed out by having black buoys on the eastern side of the channel, and red ones on the western side; but as the sands frequently shift, no stranger should attempt entering without a pilot. A smaller buoy is placed just within the bar to mark a shoal part of Hook Bank, which appears to be advancing into the channel. There is a considerable sea on the bar during the prevalence of southerly or easterly winds, during which time no stranger should attempt to cross; but under favourable or urgent circumstances steer for the bay buoy, which, as well as the next black buoy, should be left half a cable's length to the eastward, then run E. by N.  $\frac{1}{2}$  E. till abreast of the inner red buoy, which will open a remarkable clump of trees on Lytchell Hill. With this mark well open and the trees to the eastward of Branksea Castle, bearing about N. by W.  $\frac{1}{4}$  W., run in between the Haven Point in deep water. Give North Haven Point on the east side a good berth, making for the anchorage off the pier at Branksea Castle. If bound for Poole, proceed by the main channel, which is marked by brooms all the way up.

The outer red buoy is placed on the Milk Maid's Bank. Heavy ground-swells cause the bank to vary, but not so as materially to affect the passage over the bar.

Poole Harbour enjoys an uncommon advantage, namely, that of the ebbing and flowing of the tide twice in 12 hours; it first flows regularly for 6 hours, and ebbs for an hour and a half: it then flows again for an hour and a half, and ebbs during the remaining three hours. The second flood seems to be owing to the peculiar situation of the mouth of the river. By its being in a bay towards the east, the tide of ebb, from between the Isle of Wight and the main, falls into that bay, and forces its way into the river, so as to raise the water for an hour and a half; at which period the water without the bar, by its falling below the level of that within, produces a second ebb for the space of three hours, or until it is low water.

It is high water at the bar and in the harbour on full and change of the moon, at 9h. 30m. Spring tides rise from 5 feet to 6 $\frac{1}{2}$  feet, according to the strength and direction of the wind: neap tides rise about 2 feet 9 inches.

Good anchorage may be found in easterly gales in Studland Bay for vessels under 12 feet draught, close in and abreast of the Middle Three Yards or upright pillars in the cliff, with Old Harry S.S.E.  $\frac{1}{2}$  E.

In westerly gales Studland Bay affords excellent shelter.

About 2 $\frac{1}{2}$  miles from Old Harry Point is Peveral Point and Ledge S.W.  $\frac{1}{2}$  W., between which is Swanage Bay, in which the anchorage is not good, having rocks within it as well as off Peveral Point. Off Darleston Point is a small rock above water, close to the land. This point is three-quarters of a mile from Peveral Point.

In sailing between the Owers and Darleston Point from abreast of the Elbow, steer W.N.W.  $\frac{1}{2}$  W. about 20 miles, when you will be opposite Dunnose. St. Catherine's Point lies about 5 miles; St. Catherine's Point to the Needles 12 miles about N.W.  $\frac{1}{2}$  N.; and from the Needles to Darleston Point 15 miles W. by N. Several races or overfalls are in this passage, between Dunnose and St. Catherine's Point. Off the latter, at Rockenend, is some foul ground, extending nearly 2 miles W.  $\frac{1}{4}$  N.; the shores are rocky from hence to the Needles, and the ground outside foul, more particularly off Atherfield and Bull Place Points, where the rocks are nearly dry. Towards the Needles there is an indraught setting in with the flood.

There is a fixed light on St. Catherine's Point, visible in all directions towards the sea, and may be seen in clear weather 6 or 7 leagues.

Tides.—On the full and change of the moon, it is high water on the shore at Cowes, 15 minutes past 11; Southampton, Calshot Castle, and Beaulieu River, 55 minutes past 11; Lymington, 15 minutes past 10; Hurst Castle, 30 minutes past 9; Needles, 56 minutes past 8; Dunnose, 56 minutes past 8; Christ Church, 50 minutes past 8; and in Poole Harbour, at 9.

In Southampton and Beaulieu Rivers spring tides rise about 13 feet, neap tides rise 7 feet. At Newtown and Yarmouth Rivers, and at Lymington, spring tides rise about 12, neap tides rise 8 feet. At Hurst and at the Needles Point spring tides rise about 7½, neaps about 5 feet. In Christ Church and Poole Harbours spring-tides rise about 6, and neap tides about 4 feet.

The flood from Darlestone Head sets near the shore into Poole and Christ Church Bays, and thence over the Shingles to Sconce Point; and within the distance of 2 leagues from Darlestone Point it runs into Freshwater, Brixtone, and Chale Bays; but beyond that distance, directly up Channel.

In the Needles Channel the stream makes to the eastward a quarter of an hour after high water on the shore, or till 10 o'clock, but in the Channel opposite Cowes until half-past 10. The flood runs but slowly into Lymington, Beaulieu, and Southampton, till the western stream flows from Spithead; then it becomes more rapid, flowing 7 hours, and ebbing 5. Its velocity in the Needles Channel is about 4 knots with spring, and 3 neap; at Cowes 3 spring, and 2 neap; and at Spithead 2½ spring, and 1 neap.

## SECTION VI.

### FROM ST. ALBAN'S HEAD TO PLYMOUTH.

The ground is foul about St. Alban's Head, extending to the southward about three quarters of a mile, while to the westward a narrow portion of it extends nearly 2 miles. An overfall or race stretches to the westward, both with the ebb and the flood. To the northward of St. Alban's Head is Chapman's Pool, where small vessels with easterly winds may stop a tide.

Kimeridge Ledge runs along shore from Chapman's Pool about 4 miles to the westward, to clear which keep St. Alban's Head E. by S. Along this coast are several small coves fit only for small craft,—Kimeridge Bay, War, Mupe, and Lulworth Cove. This last is a safe harbour, almost land-locked, the entrance between two bluff points: south-westerly winds blow in.

The entrance to Weymouth lies 14½ miles N.W. by W. from St. Alban's Head. There is only 6 feet water on the bar, but inside 9 feet water. Spring tides rise only 6 or 7 feet. The channel is narrow, but the deepest water is on the north shore. A short distance from the point on the south side of the harbour is a small rocky shoal, called the Mixon. Half a mile E.S.E. from the jetty head there is good riding ground in 7 or 8 fathoms. The north end of the town of Melcombe, open to the northward of the pierhead, leads to the northward of the Mixon, and also to the anchorage.

The Road of Portland lies between Weymouth and the north end of Portland. The anchorage is very good, in from 6 to 7 fathoms, the north point of Port Lang bearing S. by W. Portland Castle S.W. about 1½ mile, and the west cliffs of Portland just open; and Bellefield Hall on with Weymouth Old Castle N.N.W.



$\frac{1}{2}$  W. There is also good ground in 12 or 13 fathoms, with the north point of Portland S.S.W.  $\frac{1}{2}$  W.

The southern point, called Portland Bill, lies W. by N. from St. Alban's Head. Upon this point there are two white lighthouses, and bear, with respect to each other, N.N.W.  $\frac{1}{2}$  W.; both lights fixed, and distant from each other 1,500 feet; the lower light 131 feet, and the upper 198 above high water, and may be seen at the distance of 4 leagues.

The Shambles is a dangerous shoal, the western end of which lies  $2\frac{1}{2}$  miles S.E.  $\frac{1}{2}$  E. from the pitch of the Bill of Portland, and the eastern extreme of it is E.S.E.  $4\frac{1}{2}$  miles from the same point. It is composed principally of course shingle, sand, and shells; it trends nearly E. by S. and W. by N. by compass, is 2 miles in length, and three-quarters of a mile in breadth. The depths of water on the Shambles vary from 11 feet to 7 fathoms; the former depth will be found nearly in the centre and on the southern side of the shoal. The long north-western leading mark to clear the eastern end of the Shambles is Wyke Regis Church distinctly open to the northward of the north-east point of Portland, N. by W.  $\frac{1}{2}$  W.; this church in one with the north-eastern end of Portland will carry you over the end of the shoal in 7 fathoms water. The mark to clear the western end thereof is Portland Spire just in sight to the south-westward of the north westernmost windmill. The Folly Barn, or Iron's New House, which is nearly the same, touching the north-eastern point of Portland, will carry you over the shoalest part, viz., 11 feet. This shoal, in fine weather, is always distinguishable by the rippling. Between the Shambles and Portland there is a good working channel, which contains from 9 to 16 fathoms.

By order of the Trinity-house, two useful buoys have been placed on the northern edge of the Shambles. That on the eastern end is red, in 6 fathoms, with Wyke Regis Church Tower just over the low part of the N.E. end of Portland; and Portland Bill bearing nearly W.N.W.

The buoy on the west end of the shoal is black, and lies in 7 fathoms, with Portland church open to the westward of the northernmost windmill, bearing N: by W.  $\frac{1}{2}$  W., and the Bill of Portland N.W.  $\frac{1}{2}$  W.

From their exposed situation these buoys are liable to drift, and a sight of them cannot, therefore, be depended on.

The Race of Portland is a periodical commotion of the sea, which rages with great violence on the southern side of the Bill, varying in distance therefrom as the winds are northerly or southerly, and in position according as it is ebb or flood. The race is caused by the rocky ledge which projects somewhat more than a mile in a southerly direction from the Bill; both sides whereof being remarkably steep, the consequent transition from deep to shoal water is very sudden. With northerly winds, the the distance of the Race from the Bill is nearly two miles, and there are great overfalls even without that distance; but with southerly winds it scarcely exceeds half a mile. During the north-eastern stream of tide, the raging takes place to the eastward of the rocky ledge above-mentioned, and during the south-western stream, to the westward thereof, thus varying in position between the two streams of tide about a mile, independent of the effects of wind. During the spring tides, the agitation is so violent as to render it absolutely dangerous for small vessels to attempt going through it; and in tempestuous weather, during the north-eastern stream of tide, the whole space between Portland and the Shambles is one continued sheet of broken water. In fine weather, even the noise caused by the Race may be heard a considerable distance.

The best leading marks between the Race and the Shambles, abstracted from the

influence of tide, are Portland New Church Spire and the Poor-house in one, bearing N.  $\frac{1}{2}$  E., or the two lights in one, bearing N.N.W.  $\frac{1}{2}$  W. When passing between the Shambles and the Bill, during the north-eastern stream of tide, it will be necessary that the highest or north-westernmost light should be kept open to the southward of the lowest or south-easternmost light, to counteract its effects, as it sets directly for, and with velocity over, the Shambles; and the south-western stream sets as strongly into the Race. This channel should never be attempted without a commanding breeze. There is a pretty good channel between the Race and the Bill, having from 3 to 9 fathoms, which may occasionally be used, if necessary, particularly with a free wind and slack water, ranging within one-third of a mile of the Bill.

West Bay is on the north-western side of the Bill of Portland, and affords very good shelter against those winds which blow from between S.S.E. and N. by E. The water is however deep, viz., 12 to 16 fathoms, and the quality of the ground is coarse, loose gravel, or shingle. The following bearings will point out the anchorage, viz., the Bill S.  $\frac{1}{2}$  E., and Chesilton Village E.S.E.  $\frac{1}{4}$  E., distant off shore one mile or more. The greatest foresight is necessary, when using this anchorage in the winter season, to provide against sudden shifts of wind, as those which blow strongly from the westward and south-westward send in a very heavy turbulent sea, against which few anchors would hold, or few vessels could attempt to beat, with any prospect of success; for although the tide sweeps strongly along the cliffs to the southward, yet the influence thereof is too closely confined to the shore to produce any advantageous effect on vessels striving to get an offing. It is, however, possible, between the periods of half-flood and half-ebb, to work out of the anchorage with the wind at all to the southward of S.S.W. by compass, and from half-ebb to half-flood the attempt might succeed, provided the wind was in any degree to the northward of W.N.W. by compass; but I would not advise too much reliance to be placed even on this alternative; a vessel is on all occasions much safer at sea than in West Bay.

Bridport is a pier harbour. Off the entrance of the port is a small bed of rocky ground called the Pollock, having only 16 feet water over it; it lies about half a mile W.S.W. A similar spot called the High Ground, bearing W.N.W.  $\frac{1}{4}$  W. about a mile from the harbour, with but 15 feet water over it. When a remarkable hill called Puncknoll, is on with the east end of the cliff near Burton Hive, you will be to the southward of the Pollock and High Grounds.

Lyme Regis dries at low water. The artificial island called the Cob, protects it from all but easterly winds. It is 22 miles N.N.W.  $\frac{3}{4}$  W. from the Bill of Portland.

Exmouth Bar is very dangerous, the entrance intricate and narrow, with rocks on each side, therefore should not be attempted by those unacquainted. The usual anchorage is in 10 or 12 feet off Starcross. At Topsham, alongside the quay, vessels lie dry at low water.

Lieut. Robert Loney, R.N., who has lately surveyed this harbour, gives the following directions:

"The entrance to this harbour is almost blocked up with sands: the largest and outermost is called the Pole and is covered at high water. The common channel in is to the eastward of this sand, the passage is narrow and intricate, but has lately been well buoyed; that at the entrance is red, lying in 4 fathoms water, just to the westward of which a vessel may stop in 22 feet till the tide serves to enter. Along the northern edge of the Pole Sand are three white buoys; and at its northern extremity, called Cheekstone Ledge, is another, painted black and

white. On the opposite shore there are five black buoys, placed at the extremity of the rocky reefs which run out from the land. There is also a black buoy upon the Conger rock, which is near the middle of the channel and almost abreast of the third white buoy of the Pole.

"Having arrived opposite to the buoy of the Fairway, which is red, you may bring the two first black buoys in a line, by which you will clear all the rocks that lie on the outside of the bar. You will observe a remarkable rock near Oakham Point, and when the sea washes the bottom of this rock there will be  $12\frac{1}{2}$  feet over the bar. Steer directly between the black and the white buoys, by which you will pass to the southward of the Flat Ledge, the Page Ledge, the Double Ledge, and the Long Ledge, all of which have black buoys at their extremities.

"When the Mare Rocks, which extend towards the Long Ledge, are covered, then a vessel drawing not more than 10 feet water may sail on with Strait Point just open of the land, passing over both the long and Double Ledges. The mark for clearing the Conger Rock is the Belvidere on with Parker's storehouse: be careful to pass between the white and black buoys and not to go to the northward of the Conger: when past these two buoys you may, if you choose, anchor in 8, 10, or 11 feet at low water. Bring the Belvidere open of the windmill to the northward of Exmouth and you will clear Day's Ledge and the shoal off the coast guard station, on the outer edge of which is a black buoy. The Belvidere on with the western part of the house to the westward of the brick house will lead clear of the shoal below Cheekstone Ledge. The lower part of a grove of trees on with Dixon's house near Exmouth, will carry you past the eastern ground or middle, which lies opposite the town.

"To the N.W. of Cheekstone Ledge is the Warren Sand, to clear the outer end of which you should bring the outer end of a remarkable hedge on with Adam's hill. There is a channel between the Pole and Warren, but at low water it is not passable. The mark for this passage, at high water, is Warren Point in one with a mill near Exmouth. To go well clear of the east end of the Pole, at low water spring-tides, bring Otterton Head on with Strait Point. Westdown beacon just open of the high land of Orkum will clear the Pole at half-tide. In coming for the entrance from the westward bring the house over the westernmost house in Dawlish, and run along the southern side of the Pole. To clear the reef which runs off Strait Point, bring the Obelisk at Haldown a sail's breadth open of the high land of Orkum.

"It is high water at 25 minutes after 6 o'clock full and change. The least depth of water over the bar, at low water spring tides, is 6 feet, and with neap tides 8 feet. Tide rises with springs 14 feet, and with neaps 8 feet."

Teignmouth lies about  $4\frac{1}{2}$  miles from Exmouth, is a bar harbour, and is very little frequented except by coasters.

Torbay.—The entrance into the bay, formed between Hobsnose and Berryhead, is  $3\frac{1}{2}$  miles wide, anchorage in general good and ground clear. Hobsnose is at the northern point of Torbay, lying about 4 miles from Teignmouth Bar, and 37 miles W.N.W.  $\frac{1}{4}$  W. from the Bill of Portland. Four small isles or large rocks lie off this point, the largest and most eastern is called the Orestone or Great Rock. The Loadstone or Flat Rock lies close to the point; between these two rocks there are 6 fathoms. The next rock is the Thatcher, and the most western is the Shag, and a smaller one beyond called the Little Shag. Close to these rocks the water is from 5 to 10 fathoms, the ground between them and the shore rocky and bad.

In sailing in you may either keep close to the Orestone or Berryhead, the southern

point. If you wish to sail between Hobs and Orestone keep about mid-channel. To the west and south of the Orestone the water is shoal for about a cable's length.

Ships may anchor in Torbay in 6, 7, 8, or 9 fathoms, holding ground being good strong clay; the common marks for anchoring being, Berry Head-south, S. by E. or S.S.E., and Brixham Church, on with the pier-head, in 7 fathoms, but ships may ride well sheltered on the north side. Easterly winds raise a great swell, but about  $1\frac{1}{2}$  mile from Brixham, in consequence of an underset to windward, ships ride much easier than at any other part of the bay. From the middle of the bay, Orestone E.N.E. and Berry Head S.S.E.; the depth of water 7 fathoms. Small vessels usually lie aground at Brixham, on the south side, and at Torquay on the north side of the bay. Brixham pier has a red light.

There is an eddy on the south side of the bay, with the eastern stream, and on the north side with the western stream. A branch of both sets round the bay, but the western stream, not far without the Orestone, sets for Berryhead.

Line-of-battle ships should not anchor on the south side of the bay nearer than to have the north end of the beach in Elbinny Cove, just open of the rocky point about half a mile to the eastward of the cove; nor on the north side, than to have Paington Church W.  $\frac{1}{4}$  S.

Keep the south end of Brixham Pier open of the cliff a little to the westward of Shoalstone Point, and you are clear of the foul ground off Berry Head.

Vessels drawing 13 feet may come within Brixham old pier with spring tides, but with neap tides there is not above 8 feet at the pier; at the new pier head there is 14 feet at half tide.

Dartmouth Harbour lies between the Start and Berry Head. It is well adapted for the reception of trading vessels in any number; but the entrance to the harbour is narrow, and the opening does not readily unfold itself to vessels coming from the southward: the square steeple, however, of Stoke Fleming Church, which stands very conspicuously near a white house upon the land to the south-westward of the harbour's mouth, will serve to mark its position nearly, until, by a nearer approach, Kingswear Old Castle and St. Petrox Church become visible. St. Petrox Church and Dartmouth Castle are on the western side of the entrance, just within the Battery Point; and the Old Castle of Kingswear stands on the rocks near the water's edge on the eastern side.

The dangers in going into Dartmouth are few. The Homestone, 220 fathoms south S.S.W.  $\frac{1}{4}$  W. from the Blackstone, which is a very remarkable black rugged rock, always above the water, situated in the south-western part of the Range. The Homestone has, on some occasions, as little as three feet water upon it. The ledges which project nearly a quarter of a mile from Froward Point and the Cheekstone, which lies two-thirds of a cable in a south-easterly direction from the Battery Point. The latter is principally to be guarded against, as it encroaches most upon the fairway, where the channel is narrowest.

When running for Dartmouth, keep the Castle of Dartmouth open to the eastward of the Blackstone, in order to carry you to the eastward of the Homestone, which you will have passed when Stoke Fleming Church shuts in with the high land over Combe Point; and, to avoid the rocky ledges which run off to seaward from Froward Point, keep Kingswear Point in one with Dartmouth Castle. When abreast of the Blackstone, to which a berth of half a cable should be given, steer directly for the harbour's mouth, minding, for the purpose of avoiding the Cheekstone, to keep the westernmost house in Kingswear well open of Petrox Point; and having passed the Castle, keep the western shore on board, and anchor abreast of

Kingswear, or Dartmouth, as convenient. There is a channel for small craft between the Blackstone and Compass Point, but it should not be attempted by large vessels till after half-flood, nor then but on emergencies.

Very serious inconvenience attends the ingress to and egress from Dartmouth harbour, in consequence of the numerous flaws of wind which come off the high lands very suddenly, and with great force. No square-rigged vessel therefore should attempt to enter or leave the harbour except with leading winds. Between S.W. by S. and S.E. by E. the winds blow truly in, and as truly out when between N.W. by N. and N.E. These considerations operate strongly against Dartmouth as a rendezvous for cruisers: even cutters cannot always succeed in getting to sea with south-westerly winds.

Between the Blackstone and Froward Point is the anchorage called the Range, where vessels occasionally anchor in 5 fathoms. But this anchorage should be resorted to only as preparatory for entering Dartmouth; for, if caught there by southerly winds, the sea gets up very suddenly, and there is no alternative but that of slipping.

The tide of flood at the entrance of Dartmouth runs directly along shore from the Homestone to Dartmouth Castle, and there crosses the harbour and follows the trend of the northern shore as far as Kingswear Point, where it again crosses the harbour towards the town of Dartmouth. During the flood there is a strong eddy on the southern shore abreast of Warfleet Cove. The ebb in like manner crosses the harbour from point to point obliquely, and creates a strong eddy between Kingswear and Kettle Point.

On the tower of the castle on St. Petrox Point a red light is exhibited and kept burning during the whole year, except the months of June, July, and August: it is elevated 49 feet above high water, and may be seen at the distance of 7 miles.

With a leading wind from the westward, give the Coomb rocks a good berth; steer to the eastward until you open Kingswear Castle to the eastward of the Blackstone Rock, which will take you clear of the Home Stone. After shutting in Stoke Church you may steer for the Blackstone, which is steep-to, after passing which you may steer in with Dartmouth Castle open on the larboard bow, until you have cleared the first house in Kingswear, which takes you clear of the Cheekstone, when you may run in and anchor.

With a leading wind from the eastward steer from the Mewstone to Coomb Point, until Kingswear Point is in one with Dartmouth Castle, by which you avoid the last ledge. You are abreast of the last ledge when you see, to the eastward of Dartmouth, a red point, which, near the water, changes to black, and when a white stone in the red part appears just over the black.

To the north-eastward of the Start lies the dangerous rocky bank called the Skerries; on the southern part of which there is a cluster of rocks having only 9 feet over them at low water. Widdicombe House in one with the northernmost White House on the Beesands will lead between the Skerries and the Start Point; the Berry Head in sight to the eastward of the Down-end, bearing N.E., will carry you to the eastward of them; Strait-gate Cottage and Barn in one will carry you to the northward of them; the Down-end in sight to the westward of the Mewstone will lead you between them and the land; and the Praul open of the Start, bearing W.  $\frac{1}{2}$  N. will lead to the southward of them.

From the Start towards Dartmouth the sea-shore is generally low, rising very gradually into the interior; particularly in the vicinity of Stoke Fleming, the view from thence eastward terminating at the Berry Head, which is the southern bound-

ary of Torbay. The Berry Head is lofty and precipitous, and may be discerned at the distance of 7 and 8 leagues.

**Start Point.**—On this point there is a brilliant revolving light exhibited, elevated 204 feet above the sea, and may be seen at the distance of 6 leagues: a lower fixed light is shown from the same lighthouse in the direction of Berry Head. Off the point lie the Peartree Rocks, and, about a quarter of a mile outside of them, a dangerous sunk rock.

A considerable rippling off Star Point is occasioned by the confluence of the fair channel tide with the in-shore streams between Dartmouth and Start Point and within the Skerries.

Captain Martin White, R.N., says, "In the direction of S.  $\frac{1}{4}$  W. from the Start Point there is a bank of 8 or 9 miles in length and 3 in breadth, and trending N.E. and S.W.; and though there are not less than 29 fathoms on any part of it, the ebullition there is very strong during spring tides. Ittor Rock in one with Stoke Fleming Church will carry you over the north-eastern end thereof in 30 fathoms, and the same rock in one with the Start Point will lead you over the south-western end in the same depth. The soundings off the Start are somewhat irregular; there are from 2 to 3 fathoms more water near the land than in the offing, and further southward the depth again increases in the same proportions nearly. This is presumed to be the effect of the tide, which has also caused the formation of the bank above alluded to."

**Channel Islands Indraught.**—Captain White further observes,—“The action of the indraught in the Great Bight between Normandy and Bretagne, on vessels bound up and down channel, is by no means so universal as chart compilers in general have laboured to establish. Between five hours flood and low water, seven hours out of twelve, the whole body of water contained in the Gulf, between Cape la Hague and Brehat Island, sets out thence to the north-westward, more northerly along the coast of Normandy and more westerly along that of Bretagne; and the nearer you approach the islands, the stronger, of course, you will experience the indraught as well as the outset. But there is neither southing nor easting in the course of the tide, except between low water and 5 hours' flood. There is, therefore, no room for apprehension, except during that period, when the stream sets southerly, south-easterly, and easterly, with great velocity, extending its influence between Guernsey and the Start, nearly half channel over, and as far westward as the meridian of the Isle of Bas.”

“Course up Channel.—From any position off the Start to a corresponding one off Portland the course is E.  $\frac{1}{4}$  S., and the distance between these two headlands is 17 leagues nearly. When navigating between the Start and Portland do not approach the shore within the depth of 30 fathoms, until you have passed the meridian of Portland, and when between Portland Bill and St. Catherine Point, go not into less water than 25 fathoms; the former precaution will keep you to the southward of the Shambles and the Race, as well as keep you in the fair stream of the tide, and the latter will prevent you from experiencing the strong indraught caused by the flood running into Christchurch, the Needles, and Freshwater Bays, the duration of water, however, to the south-westward, southward, and south-eastward of the Casquets, within the supposed radius of 3 leagues, do not materially differ with those in similar directions from Portland, so that it is possible in bad weather, under a combination of disadvantageous circumstances, for the former to be mistaken, by a stranger, for those of the latter, particularly if hazy weather intervenes, so as to prevent the revolving lights of the Casquets from being distinguished,

unless indeed soundings were accidentally struck on a bank which lies S.S.W. from the Casquets.

"For it must be recollected that there are six different positions in which the three lighthouses on the Casquets will appear as two only (all of equal height, and 120 feet above high water), the first of which is only removed two points from the bearing of those on Portland, viz., N.W.  $\frac{1}{4}$  W., or S.E.  $\frac{1}{4}$  E.; E.  $\frac{1}{4}$  N. or W.  $\frac{1}{4}$  S.; N.E.,  $\frac{1}{4}$  E. or S.W.  $\frac{1}{4}$  W. Secondly, that the variation in the distance from the Lizard to those two positions does not exceed 7 or 8 miles at most; and, lastly, that this is the narrowest part of the channel westward of Beachy Head. Should a stranger, therefore, be placed in such a predicament during a winter's night, between the periods of low water and three-quarters flood, with a gale of wind from between N.W. and S.W., the consequence may easily be anticipated. This is a strong and unanswerable argument for a uniform and constant progressive attention to the lead from the instant of first striking soundings, by which such a disastrous situation can alone be successfully avoided. The Casquets bear from the Start Point S.E. by S., and are distant thence 19 leagues, and from the Bill of Portland S.S.W. 15 leagues.

"From any position off the Start, to a corresponding portion off St. Catherine Point, the course is E. by S., and the distance between those two headlands is 31 leagues. By altering the course successively between the meridians of the different headlands, as you advance up the channel, you will better counteract the direct effects of the stream. In the vicinity of Chesil Beach the shore is low, from whence the peninsula of Portland suddenly rises and forms a very remarkable promontory, assuming the form of a wedge, and declining gradually to the southward. It is everywhere rugged, and its eastern side presents all the appearance of regular layers of masonry, even to its summit. Between Weymouth Bay and St. Alban's Head the shore is principally cliff, and composed for the most part of chalk; its elevation and chalky appearance continuing as far as Old Harry, where it again abruptly declines. Throughout Christchurch Bay the land is generally low, and still more so in the vicinity of Hurst Castle, the base of which is very little elevated above the level of the sea.

"From thence the western end of the Isle of Wight, the Needle Point, rises perpendicularly, and being composed wholly of chalk becomes very remarkable when contrasted by the dark coloured ground behind it. From the Needles towards St. Catherine's Point, the land continues gradually to rise, Dunnose being 792 feet above the level of the sea. From thence it declines towards Culver Cliff, the eastern end of which, being also composed of chalk, may be easily known from the great contrast it exhibits to the land in its vicinity."

Tides.—On the days of full and change it is high water on the shore as follows, viz., at Weymouth and Portland Roads at half-past 6 o'clock; at the Bill of Portland, at one quarter past 7; at Lyme Regis, at 50 minutes past 6; at Exmouth Bar, at 25 minutes past 6; at Torbay and Dartmouth, at 6; at Start Point, at 58 minutes past 5.

In Weymouth Harbour spring tides rise 6 or 7 feet, neaps 2 or 3 feet. In Lyme Cob spring tides rise 13 or 14 feet, neap tides 5 or 6 feet. In Dartmouth Harbour spring tides rise 18 or 19 feet, neap tides 10 or 11 feet.

Off St. Alban's Head, on the full and change days, the stream of flood makes to the eastward at about 4, or about half an hour after low water in Poole Harbour. The stream of ebb makes to the westward about 10, or about one hour after the first high water in Poole Harbour. Midway between St. Alban's Head and Port-

land Road, the stream of flood makes to the eastward at about  $3\frac{1}{2}$ , and the ebb to the westward at about  $9\frac{1}{2}$ ; off the north side of the Shambles the stream of flood makes to the north-eastward at about 4 and the ebb to the south-westward at about 9. At Portland Bill the stream of flood makes to the eastward at about  $2\frac{1}{2}$ , and at about 3 the Race begins to rage, while the ebb makes westward at  $9\frac{1}{2}$ , and the Race begins at 10; eastward of the Bill, the flood makes at 4, and the ebb at 10, and further off at 5 and  $5\frac{1}{2}$ , while the ebb begins at 11 or  $11\frac{1}{2}$ ; off Lyme Regis, the flood makes to the eastward at 5, and ebb at 11; and in Torbay the eastern stream ends at 8, and on the offing at 9, while on the southern side of the bay is an eddy, with all the eastern stream, and on the north side of the bay, with the western stream, both round the bay; but outside of the Mew Stone the western stream sets direct for Berry Head.

Praule Point lies  $3\frac{1}{2}$  miles from Start Point W.  $\frac{1}{2}$  N., and  $2\frac{1}{2}$  miles N.W.  $\frac{1}{4}$  W. of Praule Point is the Bolt Head, which is very high land.

Salcombe Harbour, though very narrow all the way up to the town, is nevertheless capable of affording good shelter to vessels under the draught of 11 feet. A bar of sand, however, which stretches across the entrance, presents an obstacle to its being a place of general resort. The entrance lies between the Praul Point and Bolt Head; and immediately under the high land of the latter stands Salcombe Mewstone. The point of land next north-east of the Mewstone is distinguished by a peculiarly shaped rock called the Eelstone; and one-quarter of a mile within the latter the Bar begins, on which, at low water springs, the depth does not exceed 4 feet. The considerations to be attended to by vessels bound into or out of Salcombe, are the state of the tide, their draught of water, and the effect of the ground swell, from which the bar is seldom wholly free. The period of half-flood is the best time to attempt the passage, when there will be 12 feet on the shoalest part of the bar. When running in, keep one-third nearer to the western than to the eastern shore; and in order to pass to the westward of the shoalest water on the bar, shut in the Mewstone nearly behind the Eelstone. On passing the bar by this leading mark you will perceive a small white thatched house, resembling a lodge, standing upon the declivity of the hill to the westward of Woodville; this house must be kept its own breadth open to the westward of Fort Charles, in order to pass between the Wolf Rock and the Poundstone; and from thence the south-eastern angle of Ivy Cottage in one with the north-western angle of a remarkable white triangular garden wall will lead you between the Blackstone and Old Harry Rocks; having passed which, you have only to keep mid-channel, and anchor where convenient before you get abreast of the town. There is a channel between the Wolf and the Eastern Land, but it is narrow and seldom used. When going through it endeavour to keep mid-channel. The tide of both ebb and flood sets into and out of Salcombe according to the trend of the shores on each side, for which allowance must be made.

There is a small sunken rock, with 9 feet water on it, about three-quarters of a mile to the eastward of the Eelstone, of which care must be taken when beating into Salcombe. The leading marks, however, which have been given will carry you a long way to the westward of it.

There is a small ledge of rocks called the Ham Stone and the Gregory Rock, lying a quarter of a mile off the shore in a N.W. by W. direction from the Bolt Head, with only 4 feet upon it at low water. The Praul Signal-house open to the southward of the little Mewstone at Salcombe, will carry you a quarter of a mile to the southward of it.



The East Ruts is a patch of sunken rocks lying nearly in the fair-way of vessels bound into Plymouth Sound from the eastward. It is distant from the Mewstone 7 miles, in the direction of S. by E.  $\frac{1}{4}$  E. From the Bolt Head it bears N.W. by W.  $\frac{1}{4}$  W. at nearly the same distance, and from the Eddystone E. by S.  $11\frac{1}{4}$  miles. A sudden rise in the land inside the Praul Point in one with Bolt Head, though distant, is a tolerably good mark for this patch in one direction: no cross mark can be given capable of being taken up by a stranger. The peak of the Mewstone, however, in one with Maker Tower, will carry you nearly a mile to the eastward of it, and the peak of the Mewstone in one with Stoke Block-house, and the fall of the land at Reny and Staddon Points, will carry you 2 miles to the westward of them. There are only 22 feet on some parts of this patch at low water, but from 16 to 20 fathoms all round it.

The Eddystone Lighthouse is situated in latitude  $50^{\circ} 11' N.$  and in longitude  $4^{\circ} 14' 36'' W.$ , upon a rock called the Eddystone; and is consequently distant from the Lizard  $38\frac{1}{2}$  miles, in the direction of E.  $\frac{1}{4}$  S.; from Penlee Point  $8\frac{1}{2}$  miles, in the direction of S.W.  $\frac{1}{4}$  S.; and W.N.W.  $\frac{1}{4}$  W., 18 miles from the Bolt Head. The south-eastern and north-eastern sides of the Eddystone are foul nearly half a mile off from the main rock, but the north-western, western, and south-western sides are perfectly clean within a quarter of a mile, or even less.

The Hand-deeps are three miles and one-third from the Eddystone, in the direction of N.W. by N., upon the edge of oozy ground, and with only 22 feet of water on them. The marks for their centre are, Lord Boringdon's Park Gateway (the only conspicuous building at this distance from the land that can be conveniently employed) just wholly in view to the eastward of the high land of Penlee, (the gateway is white, and easily distinguished by an arch in the centre,) and the eastern visible part of the Moor Hills on with the sharp top of the Mewstone. The mark to avoid this shoal to the north-westward is the Steeple of Rame Church appearing to the westward of the apex of the Rame Head. The before-mentioned gateway, twice its own apparent breadth, open the eastward of the lowest part of Penlee Point, will lead you to the south-eastward of the shoal. In bad weather the position of the shoal may be discovered by the short turbulent breaking sea in its vicinity, and, in fine serene weather, by the rippling and noise which the tide makes there. It is very dangerous, and ought to be studiously avoided by large ships, particularly if there is any swell. The Tower on Mount Batten lies nearly in the line with Lord Boringdon's Park Gate and Penlee Point, and, though a low mark for such a distance, it may be useful when fog hangs over the valley in-shore.

The entrance to Plymouth Sound lies between the Mewstone and Rame Head: the former is a huge, precipitous rock, in a south-westerly direction from Wembury Point, the eastern boundary of the Sound, from which it is distant nearly half a mile, though separated merely by a narrow channel. The Rame Head forms the extremity of the promontory, which constitutes the western boundary of the Sound; it is very lofty, and, when viewed from the southward, assumes a form completely conical. There is a small white building (ruined chapel) on the summit of the Rame Head, which, together with the turreted beacon-tower on Penlee Heights, the Steeple of Rame Church, Maker Tower, Mount Batten, and the Mewstone, cannot fail of well identifying the land in this neighbourhood.

Plymouth is generally considered, and not without good reason, as the most capacious and secure rendezvous in Great Britain. It possesses two good harbours, Hamoaze and Catwater. Hamoaze is situated at the entrance of the River Tamer;

and, though the ingress is somewhat contracted and circuitous, it is by far the most considerable of the two, inasmuch as it is the principal resort of her Majesty's ships, and contains space sufficient for one hundred sail of the line at moorings, independent of anchorage for smaller vessels, in moderate depth of water, and on good holding-ground, and most effectually secured against every possible contingency, in respect to wind and sea. Catwater forms the entrance to the River Plym, and, with Sutton Pool, is frequented principally by merchant vessels and foreigners.

A magnificent Breakwater has, of late years, been thrown across the Sound for the protection of the anchorage: its western extremity is placed about 210 fathoms to the northward of the shoal of the Panther; and extending towards Bovisand Bay, directly across the shoal of the Shovel, terminates in the vicinity of Staddon Point, from which it is distant 360 fathoms. The central division of this Breakwater makes an angle with the true meridian of N. 86° W., and is in length 3000 feet, from each end of which an arm or head projects to the distance of 1050 feet more, so as to shut in that part of the Sound which lies to the south-eastward of a straight line drawn from Penlee to Dunstone Points. The dangers to be apprehended when approaching Plymouth Sound, without the Breakwater, are, on the western side, the Dragstone, which projects in a south-easterly direction from Penlee Point to the distance of two cables' length. In the centre are the Knap, Panther, Tinker, and Shovel; and on the eastern side are the reef off the Mewstone, and the Shagstone, with the rocks in its vicinity.

The Shagstone, though small, is a remarkable rock, being very nearly square; it is always above high water, and is distant from the Mewstone nine-tenths of a mile, in a north-westerly direction.

The Knap and the Panther constitute very nearly one continued shoal of sand and rock, which trends in a north-easterly direction, and is in length three cables and a half; the least water over the former is 18 feet, nor is there less over the latter. Each end of this shoal is distinguished by a black buoy. The buoy of the Panther (the north end of the shoal) lies in 5 fathoms water, with the following marks:—The spire of St. Aubyn Chapel nearly touching Ravenness Point, and the Hummock on Gurnose Point in one with the inner part of the Rany Rocks. The buoy of the Knap lies in six fathoms water, with the gamekeeper's cottage, in the valley at the termination of Edgcumbe Park, in one with the officer's house at the Signal-station on Maker Heights, and the block-house on Devil's Point just open to the eastward of Ravenness Point.

The Shovel is a more extensive shoal than either of the others, being one quarter of a mile in breadth from north to south, and one-third of a mile in length from east to west, with rocky patches of 13, 15, 16, and 24 feet on different parts of it. The south-eastern tail of this shoal projects about a cable's length without the line of the Breakwater to the southward, and has 15 feet water upon it, very near to which is a red buoy, in 5½ fathoms water. This buoy lies nearly 150 fathoms from the centre of the Breakwater, in the direction of S. ½ E.

The Tinker is the outer and most south-eastern shoal of those just alluded to. It is three quarters of a mile from the centre of the Breakwater, and in the same direction as that of the Shovel buoy: it is in length a quarter of a mile from east to west and one-eighth of a mile in breadth, and has from 14 to 19 feet water upon it, the shoalest part thereof being on the western end. There is a white buoy on each end of the Tinker. The western buoy lies with the Dock Chapel just in sight to the eastward of Ravenness Point, and Wembury Point just in sight to the northward of the Shagstone. The space between the Tinker and Breakwater is almost

completely occupied by ledges of rocky ground, over and among which there are from 3 to 5 fathoms water. The Shagstone lies on the extremity of that extensive rocky ledge which projects in a westerly and north-westerly direction from Andern and Wembury Points, and is nearly half a mile to the eastward of the Tinker. This ledge is continuous in a southerly direction from the Shagstone to the Mewstone, and from the Shagstone it trends also in a northerly and north-easterly direction, into and round Bovisand Bay.

The dangers to be apprehended within the Breakwater, when seeking an anchorage, are, the Duke Rock and Leek Bed on the eastern side of the Sound, and the shoals denominated the Scottish Grounds, on the western side, and under Redding Point. The Duke Rock and Leek Bed form nearly one continued shoal, in the form of a crescent, the convex part whereof is to the westward, near the outer or western edge of which a white buoy is placed in 5 fathoms water. This buoy lies one-third of a mile due north (N.N.E.  $\frac{1}{4}$  E.) from the eastern end of the Breakwater, in the following line:—The old white sugar-house or mill, usually called the Round Tower, situated to the north-eastward of Plymouth, four times its own apparent breadth, open to the westward of the castellated building on Mount Batten. There are not less than 17 feet on either of these two shoals, and there are 4 and 5 fathoms both within and without them. The Scottish Grounds are unconnected patches of rock, with from 3 to 4 fathoms water upon them; on their south-eastern extremity a red buoy is placed in 5 fathoms water. The long northern mark for this buoy is Stoke Block House, Devil's Point, and Ravenness Point, very nearly touching, and Tor House nearly midway between Redding Point and the Barrack Chimneys on the west end of Drake Island. Tor House is very remarkable. It is situated about one mile and a half to the northward of Plymouth, is whitewashed, and consequently greatly contrasted by the dark trees with which it is nearly surrounded. There are several other rocky patches in Plymouth Sound; but they all lie away from the anchorage, with the exception of the shoal called the New Ground, and that has lately been removed by the diving-bell, there being now 23 feet on its shoalest part, near which there is a Red Buoy.

There are two entrances into Plymouth Sound, one between the buoy of the Scottish Grounds and the western end of the Breakwater, and the other between the eastern end of the Breakwater and Staddon Point. The former is nearly half a mile in breadth; but the latter is narrowed in some places, at low water spring tides, to the breadth of one hundred fathoms.

The Western Channel into Plymouth Sound has now become the principal, and is indeed the only, entrance that can with safety be used by large ships at all times of the tides. Vessels coming from the westward should, when rounding the Rame Head and Penlee Point, give the shore a berth of at least one-third of a mile, until Tor House comes so far open of Redding Point as to appear midway between the said point and the Barrack Chimneys on the west end of Drake's Island, or until the spire of the New Church at Plymouth appears in one with the Beacon on the Hooe, (painted lately with horizontal red and white stripes;) or, as there has been another house built near Tor House, until the Old White Sugar House, or Round Tower, appears over the black angular spot in the garrison wall, either of which marks will carry them two cables' length to the eastward of the Dragstone and Saunders Rock, as well as between the latter and the Knap, and through Cawsand Bay. These leading marks should be continued until Lord Boringdon's Park Gateway appears within its own apparent breadth to the southward of the Tower on Mount Batten, which latter mark will lead them in the fair-way between the

buoy of the Scottish Grounds and the western end of the Breakwater, at nearly equal distances from each, whence they may at leisure haul over to the eastward for the anchorage.

The limits for the best anchorage in Plymouth Sound are comprised within the triangle formed by the following intersections:—Penlee Point in one with the west end of the Breakwater, Cawsand Town in one with the western end of the Breakwater, and the Old White Sugar House, or Round Tower, standing to the north-eastward of Plymouth, in one with the western side of Mount Batten; in the southern part of this space there are 86 feet, in the centre 30 feet, and in the north-eastern part 26 feet at low water perigeon or great spring tides.

When beating through Cawsand Bay, either into or out of the Sound, be cautious, when standing to the eastward, not to shut in Tor House with the Barrack Chimneys on the west end of Drake Island, nor to bring the Old White Sugar House in sight to the south-eastward of the Citadel, which precautions will keep you one-third of a cable's length to the westward of the Knap; and when standing to the westward, in the vicinity of Penlee Point, do not bring Tor House nearer to Redding Point than four times its own apparent breadth: this will keep you to the eastward of the Dragstone, over which at low water there is not more than 11 feet.

You may range Cawsand Bay by the lead alone; in the centre of it very good anchorage may be obtained, with off-shore winds, in from 4 to 6 fathoms, minding for this purpose not to open the Bolt Head to the eastward of the Mewstone, nor to shut in the west end of Drake Island with Redding Point. The ground in the northern part of Cawsand Bay is foul and rocky for a very considerable distance off, as it is also off Penlee Point and the Fish House.

The Eastern Channel into Plymouth Sound should not be attempted by vessels of any considerable draught of water, unless with a free wind, because of the numerous rocks which are scattered in its vicinity, and the occasional swell or depression of the sea there, with south-westerly and south-easterly winds. Tor House in one with the centre of the black angular spot in the Garrison wall, and nearly touching the western side of the spire of the New Church, will lead you between the Tinker and the Shagstone, and nearly up to the Breakwater, in 6, 4, and 5 fathoms water.

Some trees having grown up so as to conceal Tor House in the eastern channel, the Admiralty has caused a beacon to be erected upon the north wall of the citadel, and in a line drawn from the black angular spot to Tor House. The beacon is a vertical post, ten feet above the parapet, carrying a skeleton sphere, surmounted by a vane, the whole being painted white. This beacon will serve as a leading mark whenever Tor House is hidden by the foliage of the trees, or obscured by fogs, and it will also point out the direction of Tor House when brought over the top of the black angular spot, and thereby prevent strangers from mistaking a gentleman's house (in a grove of trees a little way to the eastward of Tor House) for Tor House itself. The New Church is furnished with a tall spire. The tower of the Old Church is square, with four pediments.

In the centre of the fair-way, however, are three rocky patches, of 24 and 18 feet water, at low water springs, the eastern extremities of which rather encroach upon this line of direction: two of these lie nearly half a mile to the southward of the Breakwater, the third about one cable's length—all three are marked by black and white chequered buoys; the Tinker by white buoys; and the shoal bank, which extends from the eastern shore and the Shagstone, by two red buoys. The above mark will lead in between these buoys, and is to be continued till Maker Tower

comes in one with the Signal Staff on the Breakwater; then steer towards Staddon Point, so as to bring the Spire of the New Church exactly in a line with the centre of Tor House; with this latter mark you will be enabled to clear the latter shoal alluded to, (the one of 18 feet,) and may thence haul close round the Breakwater for the anchorage, leaving the Leek Bed and Duke Rock to the northward. When running into or out of the Sound, upon any of the before-mentioned leading marks, bear in mind that, so long as the Bolt Head continues in sight to the southward of the Mewstone, you are without, or to the southward, of all the shoals, and that the Bolt Head, shut in with the Mewstone, ranges very closely upon the tails of both the Tinker and the Knap. There is a good channel between the Panther and the Breakwater, having from 6 to 7 fathoms water, and one also to the eastward, between the Breakwater and the southern rocks, either of which may be adopted in cases of emergency. In the latter channel, however, the Shovel and Breakwater must be ranged within the distance of half a cable, where you will find  $4\frac{1}{2}$  and 5 fathoms.

There is a light-vessel now riding at the western extremity of the Breakwater, with the following intersections and bearings:—The south-eastern side of the Old White Sugar-house, or Round Tower, just shut in with the south-eastern angle of the Garrison; Tor House in one with the eastern angle of the Drakes Island Battery, the western end of the Breakwater, S.S.W., distant 110 fathoms, and Penlee Point W.S.W.  $\frac{1}{2}$  W., distant  $1\frac{1}{2}$  miles. In this vessel two horizontal lights are at present exhibited, at the altitude of 12 feet above the level of the sea. A lighthouse is now being erected on the west end of the Breakwater.

Coming from the south-westward, and intending to run into Plymouth Sound during the night, bring the Eddystone Light to bear S.W., and keeping it in that direction, steer boldly in, N.E. by E. or N.E. by N. by compass, according to the set of the tide, until you shoalen your water to 20 fathoms, in which depth Penlee Point will not be farther from you, at most, than  $1\frac{1}{2}$  miles. In this position you will also see the Breakwater Light, if your bearings from the Eddystone have been preserved. Do not approach Penlee Point, during the night, nearer than 9 fathoms water, when rounding it, as you will not be more in that depth than two cables' length from the Dragstone.

On the western side of the entrance to Plymouth Harbour there is a harbour light, upon the West Barbican pier-head, with a fixed light 29 feet above high water mark, and may be seen at the distance of 9 miles, and may be useful for vessels going up the eastern channel. When in a line with Fish's Nose it clears the Cobler.

The following are the times of high water, on the full and change, at different places between the Isle of Wight and Plymouth.

Southampton, 11 h. 35 m.; Cowes, 11 h. 15 m.; Hurst-castle, 9 h. 30 m.; at the Needles, 8 h. 56 m.; in the harbours of Poole and Christchurch, 9 h. 0 m.; Weymouth, 6 h. 45 m.; Portland Roads, 6 h. 30 m.; Portland Bill, 7 h. 15 m.; Lyme-cob, 7 h. 5 m.; Exmouth Bar, 6 h. 25 m.; Torbay and Dartmouth, 6 h. 0 m.; Start Bay, 6 h. 5 m.; Salcombe Harbour, Bolt Head, and Bigbury Bay, 5 h. 55 m.; Eddystone, 5 h. 50 m.; Cawsand Bay, 5 h. 10 m.; Plymouth Sound, 5 h. 20 m.; Hamoaze, 5 h. 30 m.

From Durlstone Head, the flood tide, near the shore, sets thence to Hengistbury or Christchurch Head, and over the Shingles to Sconce Point. From within two leagues without Durlstone Head, the flood sets into Freshwater Bay, and upon the foul ground to the northward of St. Catherines Point; but, in the offing, without the distance of two leagues from the Head, it sets directly up channel to the eastward.

Within the Needles' Passage the stream makes to the eastward one-quarter of an hour after high water on shore. The velocity of spring tide is here about 3 knots, and of neap 2 knots. In the offing, at the back of Isle of Wight, it sets nearly with the same velocity.

The eastern stream runs through the Needles till  $\frac{1}{4}$ -past 9 o'clock; but off the Needles, in the channel, it runs till  $\frac{1}{2}$ -past 10.

The tide of flood runs slowly into the rivers of Southampton, Beaulieu, and Lymington, until the western tide sets in from Spithead. It then flows fast into them. In these harbours it flows about 7 hours, and ebbs about 5.

The singular flow of tide in Poole Harbour has been already noticed in the preceding directions.

Off the Isle of Portland spring tides set directly over the Shambles, at the rate of 6 knots an hour.

In Burton Bay and along the Chesil Bank the flood tide runs 9 hours, and the ebb only 3. Here the eastern stream runs until 10 o'clock, and sweeps along the cliffs to the south-eastward.

At Portland Bill the stream of flood makes to the south-eastward at about half-past 2 o'clock; and at about 3 the flood-race begins to rage. The stream of ebb makes to the south-westward at about half-past 9, and at about 10 its race begins to rage.

At two miles westward from the Bill the stream of flood makes to the eastward at about 4 o'clock, and the stream of ebb makes to the westward at about 10.

At five miles to the S.W. (true) of the Bill, the stream of flood makes to the eastward at about 5 o'clock, and the stream of ebb to the westward at about 11.

At five miles due south (true) from the Bill, the stream of flood makes to the eastward at about half-past 5 o'clock, and the stream of ebb to the westward at about half-past 11.

Off Lyme, &c., the stream of flood makes to the eastward at about 5 o'clock, and the stream of ebb to the westward at about 11. It is high water on shore, at Lyme, about 6 o'clock; springs rise  $13\frac{1}{2}$  or 14 feet, and neaps 5 or 6 feet.

In Torbay the eastern stream ends at about 8 o'clock, and in the offing at 9. On the south side is an eddy with all the eastern stream, and on the north side with all the western stream. Both round the bay; but the western stream, not far without the Mewstone, sets for the Berry Head.

Before the flood at the Eddystone runs eastward it is half-flood in Plymouth Sound, and off the Eddystone, in the channel, the stream runs until 9 o'clock.

In Plymouth Sound the rise and fall of the tide depend much on the strength and direction of the wind. S.S.W. winds make the highest floods and lowest ebbs: northerly winds have a contrary effect. Extraordinary spring tides rise 18 feet perpendicular; but springs in general not more than 15 or 16 feet. Ordinary neaps rise 8 or 9 feet perpendicular; but at the dead of the neaps, if the wind be northerly, they seldom exceed 6. There is, in general, 4 feet difference between their low waters; but in extraordinary tides there is a difference of 6.

## SECTION VII.

FROM PLYMOUTH TO THE LAND'S END AND SCILLY ISLANDS,  
INCLUSIVE.

Rame Head forms the extremity of the promontory which constitutes the western boundary of Plymouth Sound; it is very lofty, and, when viewed from the south, appears completely conical.

From Rame Head the distance to Deadman Point is 26 miles, the course W. by N. To St. Anthony's Head the entrance to Falmouth Harbour 32 miles W.  $\frac{1}{4}$  N., and to the Lizard 46 miles W.  $\frac{1}{4}$  S.

The little harbour of Looe lies 9 miles from Rame Head: drier at low water. The town of East Looe lies at one side of the harbour and West Looe on the other: a small island lies off the latter, called Looe Island, to the east of which is an anchorage in from 5 to 6 fathoms. The Renny Rocks lie off the S.E. end of the island.

A sunk rock, which uncovers at low springs, called the Udder, lies W. by N.  $4\frac{1}{2}$  miles from Looe Island and about half a mile from shore: it appears about 3 feet above low spring ebbs and has 8 fathoms close to. It lies with a farm-house by the shore in a line with a stone wall, which runs up nearly N.N.E.  $\frac{1}{4}$  E., and the high land of Orestone Point, below Polparrow, on with the N.W. part of Looe Island. To clear it keep the island open.

Fowey Harbour lies to the westward of Looe  $7\frac{1}{2}$  miles, and from Deadman Point E.N.E.  $\frac{1}{4}$  E. 9 miles. The entrance is very narrow, being but little more than a cable's length wide, with high land on each side; it may be easily distinguished, having the ruins of a church on the eastern side and an old windmill on the western. On the western side is also an old castle. There is no probability of missing the harbour on the western side; but on coming from the eastward, if Deadman Point cannot be seen, keep two miles off shore until some of the harbour marks are seen. A vessel may run in through mid-channel until White House and the Old Mill are in a line: You may anchor at all times in 3 fathoms.

From the direction of the harbour's mouth it has an advantage over every harbour in Cornwall as a western outlet. Should you be embayed with a southerly gale between Rame Head and Deadman Point, you may enter Fowey without either anchor or cable, as there is nothing but soft mud abreast of the town on both sides of the harbour, and will float again when the tide rises.

In the harbour spring tides rise nearly 18 feet and neaps 8 feet. The ebb runs one hour after it is low water by the shore, and always stronger than the flood. Spring ebbs run at the rate of two miles and the flood one and a half. Neap ebbs run at the rate of one mile and the flood three-quarters of a mile. High water, full and change, at 14 minutes past 5 o'clock.

In the Road of Fowey, without the harbour, there is good anchorage in from 5 to 10 fathoms; but without that depth the ground is foul. With the tower of Fowey Church over St. Saviour's Point, and the three points to the eastward open, there is good ground in 7 and 8 fathoms; fine sandy bottom.

Canness Rocks lie off Predmouth Point about  $1\frac{1}{2}$  mile W. by S.  $\frac{1}{4}$  S. from the entrance of Fowey, dries at half ebb, and is a quarter of a mile from shore, with 9 or 10 feet between it and the shore.

By a Trinity-house notice, dated 16th November, 1832, it appears a beacon has

been placed upon Cribben Head, to the westward of the harbour of Fowey: this tower is 85 feet high, and stands upon an elevation of 257 feet above the level of the sea. The said headland is thus rendered easily distinguishable, and the recurrence of those accidents will be prevented to which masters of vessels and other mariners have heretofore been exposed, by mistaking the same for St. Anthony's Head, at the entrance of Falmouth, or any other point upon that part of the coast.

There is a small cove on the larboard side as you run in for Fowey, called Predmouth Cove, having a shingly landing beach.

Polkerris or St. Austell's Bay is a good and capacious bay, with regular soundings for 6 to 12 fathoms; sandy bottom. The best anchorage is on the western side, in Ropehaven Road, with Ropehaven pier bearing W.S.W. and Blackhead S.S.W.  $\frac{1}{2}$  W.; good holding ground—sand and clay; well sheltered from west and south-west winds, in 10 to 12 fathoms.

At Polnear or Charlestown is a pier with two good basins within.

Farr Harbour is on the north-east corner of the bay, with a pier or breakwater.

Mevagizey Bay lies to the southward and westward of Polkerris. Vessels are here secure from west and southerly winds in from 13 to 15 fathoms; but as there are many spots of rocky and foul ground it is but little frequented.

The Gwineas, called, also, Windhead or Gull Rock, is a black rock always above water, lies two-thirds of a mile S.  $\frac{1}{2}$  W. from Chapel Point, and  $2\frac{1}{4}$  miles E.N.E. from Deadman's Point, another small rock called the Yaw, lies E.S.E. from the Gwineas about  $1\frac{1}{2}$  cable's length.

Deadman Point is nearly half way between the Lizard and Hame Head, is a precipitous bluff 360 feet above the sea; its steep face towards the east, and gradually declining towards the westward. From this point Pennare point bears W.  $\frac{1}{2}$  N.  $4\frac{1}{2}$  miles; to St. Anthony's Head the east side of Falmouth Harbour W.  $\frac{1}{4}$  S.  $9\frac{1}{4}$  miles; and to Blackhead W.S.W. 17 miles.

The marks for the Old Wall or Pinnacle Rock, which lies to the eastward of this anchorage, and  $1\frac{1}{2}$  miles due south of Point St. Anthony, are Milor Point on the centre of the broken rocks off St. Anthony, and a mound of earth at Flushing, on which a bowling-green house stood, seen just over the rising ground on the northern part of Pendennis Land, N. by W.  $\frac{1}{4}$  W. This pinnacle has only 26 feet water on it, but there are  $5\frac{1}{2}$  fathoms close to it.

In proceeding to the eastward from the Lizard, during the night, keep the lights in sight to the southward of the Beast. This precaution will carry you at least one mile and a half to the southward of Black Head, and lead you direct to the Eddy-stone. In thick weather come no nearer to the Lizard than 47 fathoms, as you will then be only six or seven miles from the point.

Falmouth Harbour is one of the best in England: the entrance is formed by the bold rocky coast of St. Anthony's Head on the east, and Pendennis Point on the west, being distant from each other one mile.

The light-house is erected on Point St. Anthony, the east point of entrance to Falmouth Harbour, and the light was first exhibited on the 20th February, 1835. The lamps are elevated 65 feet above the level of high water spring tides, and are visible on all bearings from N.W.  $\frac{1}{4}$  N. round seaward and up the harbour, appearing in a quick but regular succession of brilliant flashes, which may be seen more than 5 leagues off.

The best entrance is to the eastward of the Black Rock, giving Point St. Anthony a good berth, and, at low water, not going within half a cable's length of the Black Rock, on which there is a beacon consisting of a cone bearing a mast with a



ball on its summit. The leading mark is Killiganoon House on with Milor Point, bearing N.  $\frac{1}{2}$  E. : this will carry a ship in the mid-channel through Carrick Road, until the Church of St. Budoc comes over the rising ground of Trefusis Point. At the same time the summer house will appear a little open to the southward of Falmouth Church, and will lead through Cross Road, till St. Kevern Church opens to the eastward of Pendennis Point; with which mark a ship may anchor in St. Just Pool in 14 or 15 fathoms.

In hazy weather give Point St. Anthony a berth of two or three cable's length, and run in with the land of St. Mawes about a point on the starboard bow, and then steer for Milor Point. You should not approach the land of St. Mawes nearer than two cable's length, nor St. Mawes Bank within 9 or 8 fathoms. With the wind at east a ship will sail in free on the starboard tack, and with the wind at W.N.W. on the larboard tack.

Frigates, not drawing more than 18 feet, may safely pass between the Black Rock and Pendennis Point; and at half-tide there is water for ships of the line. The leading mark is Feock House on with Milor Point, bearing about N. by E.  $\frac{1}{2}$  E. This will carry a ship over Falmouth Bank in 6 fathoms at half-tide. In this channel a ship will sail in free on the larboard tack, with the wind at N.W. by W., and although the high land at Pendennis may cause the wind to baffle, there is no danger to be apprehended from it when the vessel has shot within the Black Rock.

Within the Black Rock, towards the spit of Falmouth Bank, there are some spots of foul ground, with only twenty feet on them at low water spring tides.

When moored in Carrick Road the hawse must be kept open, as southerly winds throw in much sea. Cross Road and St. Just Pool, though inconveniently far from Falmouth, afford better shelter and anchorage.

Outside the entrance of the harbour lies the Outer Road; but no ship should anchor further to the eastward than to bring St. Mawes Pier in a line with Carrick-nath Point; nor further to the westward than Misick Point in one with the Black Rock; and with either mark, from one-half to not further than 2 miles from the shore, or not further off than will just open the Pennaire Head on the east side; or bring Budoc Church in the middle of Swan Pool, Sand Bay on the other. By any position taken within the space thus marked out, a ship may, on the wind getting to the eastward, and rendering it an unsafe anchorage, either proceed to sea with ease, or run into the harbour with security; the entrance into which is by these means kept open.

Captain Hurd, late hydrographer to the Admiralty, gives us the following directions for the outer anchorage at Falmouth :—

“ In all westerly winds, but particularly during the summer season, ships of the line and men-of-war in general, having occasion to call at this port for their supplies, will find it more convenient to anchor without the points of Pendennis and St. Anthony, than to entangle themselves with the interior anchorage of Carrick Road, or St. Just's Pool, from either of which it would be difficult to get to sea, in blowing weather, with the wind any where in the south-east quarter.

“ I would, therefore, recommend that no ship, in using this outward situation, anchor more to the eastward than to bring St. Mawes's Pier in a line with Carrick-nath Point, or to the westward than Misick Point in one with the Black Rock; and on either mark from half to not further than two miles from the shore, or not further off than will just open Pennaire Head on the one side, or bring Budoc Church over the middle of Swan Pool and Sand Bay on the other, by doing which you will be sure to anchor on a bottom clear of rock. By any position taken within

the space thus marked out, you may, on the wind getting to the eastward, and rendering it an unsafe anchorage, either proceed to sea with little trouble or run into the harbour for security, the entrance to which is by these means kept open."

The entrance into Helford is W.S.W.  $\frac{1}{4}$  W. from St. Anthony's Point, distant about 4 miles. Keep in mid-channel, or rather more to the southward, in going in or out of this harbour, the ground on the northern shore being foul, and a reef at the entrance, called the Gedges, having but 6 feet water over it. When within the northern point you may anchor by bringing Mawnan Church to bear E.N.E. in from  $2\frac{1}{2}$  to  $3\frac{1}{2}$  feet at low water. The town, which lies about 3 miles from the entrance on the south side, has a bar a little to the eastward, with only 12 feet water, the best water over it being on the south shore. The same depth of water is at the town as on the bar. Mawnan Church stands on a hill on the north side, and a castle, called Little Dennis, on the south side of the entrance.

The Manacles are a group of dangerous rocks, connected by ledges, and situated about three miles E.  $\frac{1}{4}$  S. from Black Head, and three-quarters of a mile S.E.  $\frac{1}{4}$  S. from the Manacle Point. They lie to the south-eastward of Porthonstack Cove, and project in some cases as much as one mile from the nearest headland. One head of these rocks is always above water; the remaining part cover and uncover alternately. It will appear very evident on a close examination of this part of the coast, that vessels in general make too free with the Manacles, for Mawnan Church open of the Nare Head will not clear the Penwin and the Vaze. These two rocks are six-tenths of a mile in an E.N.E.  $\frac{1}{4}$  E. direction from the highest of the Manacle rocks; they lie north-west and south east from each other, and are distant asunder one cable's length. Mawnan Church, in one exactly with the lowest part of the Nare Head, is the mark for them both. Vessels, therefore, when rounding the Manacles, should not shut in the extremity of the land at the Lizard Point (the Beast) until the square Tower of Mawnan Church appears well open to the north-eastward of the lowest point of land at the Nare Head: these precautions will ensure an offing of at least one-third of a mile from the Penwin and Vaze. The former rock is awash at low water, at which period there are only 5 feet water on the Vaze. A black buoy with the word "Manacles" on its head has been placed in  $18\frac{1}{2}$  fathoms at low water spring tides, and at 56 fathoms S.E. from the outer sunken rock of the eastern extremity of the Manacles Ridge. Its marks are, the southernmost building upon the high land southward of Coverack, apparently midway between the two outer rocks off the north point of that cove, bearing W. by S. Mawnan Church Tower on with the first rise of the land from the sea, upon the Nare Point, N. by W.; Black Head, W.S.W.  $\frac{1}{4}$  W.; St. Kevern Church Spire, N.W. by W.  $\frac{1}{4}$  W.; and St. Anthony Light Tower, N.E. by N.

The Craigan Rock lies to the north-eastward of the Lizard Point, and in the direction of S. by W. from Cadgwith Cove, distant therefrom nearly two-thirds of a mile. It is composed of three distinct heads, forming a triangle, with only  $9\frac{1}{2}$  feet upon them at low water, though all around and also between them there are from 7 to 9 fathoms. The only directions which can be given to a stranger are, not to approach the shore nearer than one mile.

The Rose Rock lies about half a mile from the Lizard Point, in the direction of S.E. by E.  $\frac{1}{4}$  E. It consists of three very small heads or patches, and has only 13 feet on it at low water. There are, however, from 7 to 10 fathoms all round it, the ground broken and rocky, and always causing overfalls. From this rock the northern side of the western lighthouse appears open to the southward of the eastern lighthouse, half the apparent breadth of the building.

The Spanam Rock also lies to the eastward of the Lizard Point, in the direction of E.S.E.  $\frac{1}{2}$  E., and above one mile from the shore:  $4\frac{1}{2}$  fathoms were found on the rock, which has three heads or patches, and 12 and 13 fathoms very close to it on all sides. There are from 7 to 12 to fathoms between the Rose and the Spanam, and between the latter and the Beast; the ground varying and broken, and causing great overfalls. From the Spanam the western lighthouse is just perceptibly open to the southward of the eastern lighthouse; by keeping the western lighthouse, therefore, twice its own breadth open to the southward of the eastern light, you will pass to the southward of both these rocks; and large ships should not haul to the northward, after passing the ledges of Trelever, until the land in the vicinity of Lowland Point appears open to the eastward of Black Head. This line of direction passes one mile to the eastward of the Spanam. The sea breaks occasionally about these rocks with great impetuosity.

The light-houses on the Lizard Point stand high, and are well placed as leading marks for avoiding both the Wolf and Manacles. Their line of bearing is W.  $\frac{1}{2}$  N., and the lights are 224 feet above high water.

You may approach the Lizard with great confidence as well in the night as during the day, if the weather be at all clear. It is a bold and precipitous promontory, and the only dangers to be apprehended in its vicinity are the Stags.

The Stag Rocks advance in a southerly and south-westerly direction from the Lizard, to the distance of three-quarters of a mile, and there are from 5 to 9 fathoms close to them and among them. The mark to avoid them on their eastern side is Innis Head, or the Beach at Kinnock Cove, kept in sight to the eastward of the Beast, (which promontory forms the eastern part of the land at the Lizard, and, being considerably higher than the Lizard lighthouses, excludes the view of the lights from those vessels which approach nearer to Black Head than the distance of a mile and a half); and Godolphin Hill (situated about four miles to the north-westward of Helstone) kept open of Montale Point will lead to the westward of them. The latter point will, at the same time, be in one with Rill Point.

The course from any position off the Lizard to a corresponding position off the Start is E. by S., and the distance between these two headlands is twenty-one leagues. When navigating between the Lizard and the Start do not go into less water than 42 fathoms; by which precaution you will pass at least five miles to the southward of the Eddystone, the parallel of which you cannot approach, eastward or westward of the rock, so long as you preserve that depth of water. In the stream of the Eddystone there are from 34 to 37 fathoms: the ground in the former depth consists of coarse and of fine sand, but in the latter a sort of dark greenish oazy sand, and extends nearly ten miles in a westerly direction, and four miles in a southerly direction, from the Eddystone. The mark for the western extremity of this oazy matter is the Steeple of Rame Church appearing open to the westward of the vertex of the Rame Head, and Looe Island bearing N.E. by N. Endeavour to round the Start Point within the distance of five or six leagues, or in 38 and 39 fathoms; by which means you will avoid the Channel Islands indraught, even during the period when its effects are most to be apprehended, that is, between low water and five hours flood.

The land between the Lizard and the Start is, generally speaking, moderately high, and, being for the most part double, exhibits a great variety of elevation to a vessel in the offing as she varies her position. It also contains many deep openings between Helford and Looe, which, at a distance, seem to destroy the connexion. Five miles to the N.E. of Falmouth the lofty conical rock called the Gray serves

to render this part of the coast remarkable. Four miles further, and nearly midway between the Lizard and Rame Head, the Deadman stands out boldly to seaward; it is a precipitous bluff 380 feet above the sea; its steep face being towards the east, and declining gradually to the westward. Gribben Head to the westward of Fowey, and immediately succeeding the deep bight of Polkerris, is distinguished by a beacon tower 85 feet high, standing on an elevation of 257 feet above the sea. From thence to Looe the land continues high and irregular; rather declining towards Whitsand Bay, but again elevating itself in the vicinity of Plymouth.

Mounts Bay lies to the north-westward of the Lizard. The Land's End, when viewed from the south-westward and southward, presents two apparently detached hummocks, on the westernmost and lowest of which a triangular elevation is visible. As you approach the land in this direction another hummock will present itself to the westward, with buildings thereon, and ultimately Cape Cornwall will emerge from the horizon, the whole uniting as you advance to the eastward. The most conspicuous buildings in the vicinity of the Lands-end to the eastward are the Steeples of St. Buryan and Sennen and the Castle of Mount St. Michael: the two former are elevated nearly 400 feet above the level of the sea. Mount St. Michael bears a striking and peculiar resemblance to the fortress and mount of the same name in Normandy, and, together with the little town of Penzance, is situated in the north-western part of that capacious tract of water known by the name of Mounts Bay. Guavas Lake is situated to the south-westward of the mount, between it and Newlyn, and affords very good anchorage in from 3 to 8 fathoms, sheltered from all winds but those which blow from between S.S.W. and S.E.; these latter send in a very heavy breaking sea, against which few vessels could ride with any prospect of success were it not for the powerful undertow, the resistance of which, as in Torbay, increases with the strength and duration of the wind, thus enabling vessels to ride easy. In the winter season, however, the anchorage in Guavas Lake ought not to be resorted to, but as a preliminary step, when entering the piers of Mount St. Michael and Penzance. In approaching the shore between the Lizard and the Lands-end, from the offing, the depths of water will decrease in tolerable regularity. The bottom, is generally speaking, coarse sand interspersed with whole and mutilated shells.

On the eastern shore of Mounts Bay, between the Lizard Point and Helstone River there is a remarkable cragged rock called the Gull, under which vessels may occasionally find shelter against easterly and south-easterly winds: the greatest care, however, must in this case be used, to guard against a sudden shift of wind from the westward.

Several spots of foul ground are on the east side of the bay, and other places where the ground is good; as to the northward of Gunwalloe Cove, at about a mile to the southward of Looe Bar, in 7 fathoms, fine white sand; to the northward of this the ground is also clear and good. Off Port Levan the anchorage is good in 11 fathoms, with Helston Church N.E. by E.  $\frac{1}{4}$  E., and Cudden Point N.W.  $\frac{1}{4}$  N. You are sheltered from easterly winds in these places, but the ground being foul between Port Levan battery and Mount St. Michael, large ships should not anchor in less than 14 fathoms.

The shoals of Cudden and Garguinus and some other ledges have only from  $1\frac{1}{2}$  to 2 fathoms over them. On the north side of St. Michael's Mount is a pier for small vessels, off which is an anchorage in 4 fathoms.

Near Newlyn, in Guavas Lake, are two small sunken rocks, Low-lea and Carn-base; the first with only 5 feet water,  $\frac{1}{4}$  of a mile from Pealea Point, St. Paul's

Church bearing N.W. by W.  $\frac{1}{2}$  W. The latter has 6 feet over it, and lies above  $\frac{1}{4}$  of a mile north of the former. Between the two the depth is about 10 fathoms.

A rock called the Geer lies on the north side of Guavas Lake, appearing at low spring tides, and having several sunken rocks near it. It lies one-third of a mile from Penzance Pier, S.  $\frac{1}{4}$  E.

To sail into Guavas Lake from the eastward, keep towards the western shore, until near Mouse Hole, keeping the tower of St. Paul's Church above the land, bringing it to the northward of Pealea Point. Steer then for Penzance, taking care to keep the windows of St. Paul's Tower in sight until you bring the tower to the northward of the long hedge between Pealea Point and Newlyn, which is half-way between those two places, and come strait down from the church to the cliff; then haul in for Newlyn Pier point. Lie with your small bower E.N.E., and the best W.S.W., that you may lie with an open hause, with S.E. and southerly winds, which send a great sea in here.

The tide in Mount's Bay runs in various directions; but, in the N.W. part, it has little strength, and ships may always lie with their heads to the wind: if their ground tackle be good, they will ride safely, unless the wind should get round to the N.W. by N., and blow hard: in this case the anchors may come home, because the ground has a descent to leeward.

In the pier of Penzance there are 13 feet of water with spring tides, and 9 feet with neaps. In the pier of St. Michael's Mount there is rather more water than at Penzance.

In coming up into the Bay either from the eastward or westward, the ground will be found clear, with fair coarse sand, until within a mile of the shore, and from 23 to 20 fathoms. Large ships generally anchor to the eastward of the Low-lee and Carn-base, between St. Clement's Isle and St. Michael's Mount, at the distance of about one mile from the former, in 12 or 13 fathoms.

On the pier-head of Penzance, which is a mile and three-quarters from St. Michael's Mount, is a white tower, exhibiting a fixed light while within it are 10 feet of water. The lantern is 29 feet above high water mark, and may be seen at nearly three leagues off. The light on a N.N.W. bearing leads across the bay, up to the harbour, clear of all danger. In this part of the bay, the stream of tide is scarcely perceptible.

The Rundlestone is nearly a mile to the southward of St. Leven Lands-end, vessels should not steer for the light until it bears N.  $\frac{1}{4}$  E.: this line of bearing will carry a vessel at least a mile and a half to the westward of the Rundlestone, as well as clear of all other danger; and, as the western extremity of the Longships does not project beyond 50 or 60 fathoms from the base of the lighthouse, a vessel may safely round them at two cables' distance. A passage between the Rundlestone and the land should never be attempted by a stranger. The bearing of the Rundlestone from the lighthouse is S. by E.  $\frac{1}{4}$  E., and the distance between them four miles: this rock shows itself about four hours ebb.

The Corporation of Trinity House, in the hope of preventing a recurrence of the melancholy and serious losses which have frequently been occasioned by vessels striking on the Rundlestone, when navigating round the Land's End, have lately caused two beacons, in a line with that stone, to be erected at Porthwarrow, near Point Tol-Pedan-Penwith, whereby masters of vessels, attending to the instructions hereunder given, may navigate with greater security both to the northward and southward of that dangerous rock. The beacon on the Rundlestone, erected by order of the Trinity House, in 1795, has long ago been carried away by the force

of the sea. A buoy has, however, since indicated the situation of the rock, but it has several times parted from its moorings, again re-instated, and is to be continued so long as the sea will permit.

The southernmost or outer Beacon is of a conical form, and painted red.

The northernmost or inner beacon has a large and extended base, and is coloured black, excepting a small part of the pillar, which is painted white immediately above the base.

To sail to the southward of, or without, the Rundlestone ;

Masters of vessels must take especial care not to bring the beacons in one, until the base of the northernmost or black and white beacon is wholly seen above the land, or the Longships Lighthouse bearing N. by W. ; when the line of the beacons may be crossed, and vessels pass to the southward of the stone in safety.

To sail to the northward or inside of the Rundlestone :

The same degree of caution must be used not to bring the beacons in one, until the white part of the inner or northernmost beacon is entirely hidden by the land, and the Longships Lighthouse just open of the land ; when the line of the beacons may be crossed, and vessels pass to the northward of the Stone.

To sail through the Inner Channel, which is considered the best, as the tide sets more regularly therein, and begins to run to the eastward (which it does for three hours only) one hour before high water on shore, shut in the Longships Lighthouse with the land, or keep Tetter Due on with Castle Treen Point.

Vessels turning through the passage between the Rundlestone and Point Tol-Pedan-Penwith, must be very careful, when in a line with the beacons, to put about the moment the white part of the northernmost beacon appears above the land.

The Wolf Rock is 21 miles from the Scilly lighthouse, in the direction of E.S.E.  $\frac{1}{2}$  E., 24 miles from the Lizard Point, in the direction of N.W. by W.  $\frac{1}{4}$  W., and is only one mile and a quarter to the northward of a supposed straight line drawn from the former to the latter. It is in latitude  $49^{\circ} 56' 32''$  N., and in longitude  $5^{\circ} 47' 30''$  W., and appears about 20 fathoms in length and 15 in breadth at low water great spring tides. A beacon has lately been erected upon it, consisting of a cone bearing a mast, with a large ball on its summit, at an elevation of 36 feet above high water level. When running up the channel during the night, or in thick weather, do not approach Scilly within 60 fathoms, as you will not in that depth be more than five leagues from the islands ; neither come into less water, when between Scilly and the Lizard, than 44 fathoms, by which precaution you will pass at least two miles to the southward of the stream of the Wolf, the parallel of which cannot be approached, eastward or westward of the rock, so long as you preserve that depth of water. The Wolf is very steep on all sides, and is awash at high water neap tides, though covered on spring floods ; it will, however, if the beacon be destroyed, generally betray itself by the breakers it causes, unless the weather is unusually serene. There are 34 fathoms within a mile of the Wolf on all sides, 38 fathoms in the stream of it eastward and westward, and between it and the land from 34 to 37 fathoms. The long eastern mark to clear this rock on its southern side is the two Lizard lights in one, or the eastern light open to the southward of the western light, but by no means open to the northward of it. The lights in one will carry you at least three miles to the southward of the Wolf ; but they can be seen at this distance only in very clear weather, and from the deck of a vessel somewhat elevated. In the day-time, when neither the rock, the beacon, nor the breakers can be discerned, which, however, is very seldom the case, St. Michael Mount, kept ever so little open to the eastward of the high bluff point at

Lemon or Lemorna Cove, will carry you at least two miles to the eastward of it, as will also Brizens, or Bresom Island, touching the Lands-end; and the Longships lighthouse directly in one with Cape Cornwall will carry you at least a quarter of a mile to the westward of it.

From the Longships lighthouse the Wolf bears S.W., and is distant eight miles; be very cautious, therefore, when passing it on either hand from the southward, not to bring the Longships on that line of bearing: the same precautions are, of course, necessary when approaching it from the northward. In thick weather, or in the night, this rock is the more dangerous, as it does not give the warning by sound usually ascribed to it, except on sudden transitions from foul to fair weather, or *vice versa*.

In running between Scilly and the Lizard, the setting of the tide is of great importance, especially with southerly and south-westerly winds. Between the periods of high and the following low water, by the shore, the stream runs south-easterly, southerly, and south-westerly, or from the Wolf; whilst from low water to the succeeding high water, it sets north-westerly, northerly, and north-easterly, or towards that rock. This peculiarity extends to a supposed radius of four leagues from the rock, whence, as you approach either Scilly or the Lizard, the tides partake of the influence of the land.

About a mile and a quarter from the westernmost Lands-end, in the direction of W.N.W., and three miles from Tol-Peden-Penwith (St. Leven Lands-end,) in the direction of N.N.W.  $\frac{1}{2}$  W., are situated the steep and cragged rocks called the Longships, on the largest and most elevated of which stands the lighthouse, fitted with Argand lamps and reflectors, 88 feet above high water, and whitewashed. This light, however, is not so clear and conspicuous as the dangers it is meant to provide against demand: it cannot be discerned in the vicinity of the Seven Stones unless in the clearest weather, and is, therefore, in respect to vessels navigating in that dangerous position, of little or no use, unless circumstances, indeed, will permit vessels to keep within a certain distance of it. Vessels bound down the British Channel, and intending to go through between Scilly and the Lands-end, cannot discern the Longships light until it bears N.N.W.  $\frac{1}{2}$  W., by reason of the intervening land of St. Leven.

There is a passage between the Longships and the land, with from 6 to 9 fathoms water; it is, however, so very much circumscribed by the Kettle-bottom and Sharks-fins, which project north-easterly from the lighthouse, as scarcely to exceed the breadth of a quarter of a mile; there are also some rocks which project westward from the Lands-end, which greatly contribute to narrow the passage; indeed, it is seldom or ever made free with except by coasters.

The Brizens, or Bresom rocks, are situated N.E. three and a half miles from the Longships, and they project from Cape Cornwall about three-quarters of a mile in a south-westerly direction. After having rounded the Longships, if bound to the north-eastward, do not bring the light to the westward of south S.S.W.  $\frac{1}{2}$  W.; this precaution will lead you about one mile to the westward of the Brizens.

When seen from a distance, the Lands-end appears in two hummocks, upon the higher of which appears a spire; approaching nearer, you see upon the outermost point another spire upon low land, it may be seen at the distance of 8 or 9 leagues, and is easily known by these marks. Whitesand Bay lies about a mile to the northward; well-sheltered anchorage in from 19 to 25 fathoms; the danger of being caught by westerly winds makes it to be but little frequented. Cape Cornwall is about four miles from the Lands-end N.N.E.  $\frac{1}{4}$  E.

## SECTION VIII.

## SCILLY ISLANDS.

St. Agnes Lighthouse bears from the Longships nearly west and 25 miles distant; from the Lizard W.N.W. 44 miles; from the Wolf Rock W.N.W.  $\frac{1}{4}$  W. 21 miles.

The Scilly Islands, and rocks in their vicinity, occupy a space of about forty-four square miles. They may be discerned in clear weather at the distance of five leagues; and by night the light on St. Agnes may be seen at the same distance; the reflectors therein are 138 feet above high water, and revolve once in the space of a minute; the lighthouse is whitewashed. On the eastern point of St. Martin stands an obelisk, whitewashed also, somewhat in the form of a cone, and elevated 220 feet above the level of the sea, which, together with the Telegraph-tower, the Windmill, and the Fort on St. Mary, serve well to designate this dangerous group. The near approach to Scilly from the south-westward and westward requires great circumspection and judgment, by reason of the rocky ledges which project in those directions, the principal of which are the Nun Deeps, Crim, Bishop, Crebinack, Bishop's Ridge, and Shovel. From the Nun Deeps the light bears S.E.; from the Crim, S.E. by E.  $\frac{1}{4}$  E.; from the Bishop, E. by S.; from the Bishop's Ridge, E.  $\frac{1}{4}$  N., and E.N.E.  $\frac{1}{4}$  E. from the Shovel. The Crim, Bishop, Crebinack, and Bishop's Ridge, are each four miles distant from the light; the Nun Deeps and Shovel lie considerably within. The Crim and Bishop are always above the water, and the summits of each are somewhat sharp. When coming from the westward, therefore, during the night, be careful to give the light an offing of at least six miles, by which precaution you will pass two miles without the verge of the dangers alluded to, and as soon as the light bears E.N.E.  $\frac{1}{4}$  E. you may steer S.E. by E.  $\frac{1}{4}$  E., which will carry you within 8 miles of the Lizard.

You may approach the south-eastern shore of St. Agnes, St. Mary, and Menewethan Islands, as near as half a mile, as there are no dangers to be apprehended without that distance. The Gilstone is three-eighths of a mile from Peninnis, in the direction of E.S.E., and appears at low water. The preservation of the offing above alluded to is rendered doubly necessary, from the influence of the tide, which, a little to the south-westward of the Crim and Bishop, runs with great rapidity to the north-westward, north, and north-eastward, eight hours out of twelve.

The rocky ledge called the Poll Bank lies six miles and one-third from St. Agnes Lighthouse, in the direction of W.S.W.  $\frac{1}{4}$  W., over which there is not less than 15 or 16 fathoms water. This shoal is surrounded by deep water, and is in no case dangerous, otherwise than to open boats in boisterous weather. Peninnis Mill in one with Goreggan, a quarter of a point open to the eastward of the lighthouse, leads directly on it.

This group of islands possesses several harbours for those vessels capable of taking the ground, and one also for large vessels, viz., St. Mary Road, though the ground-being loose sand, is not very tenacious, and indeed this is the case generally, the anchors coming home long before a stay-peak can be obtained. The harbours in most esteem are Old and New Grimsby, and St. Helen Pool. St. Mary Road affords shelter against all winds, except those which blow from between W.N.W. and S.W.; these bring in with them a very heavy fetch, but with the wind in these



directions a vessel can always run to sea, through Crow Sound, at a proper period of tide; and to enable her to do this, the following periodic elevations of the Crow Rock above the surface of the water are given. This rock is situated near Bant's Cairn, or Bantscarran Point, (St. Mary,) and is remarkable in having three distinct heads, called the Great Crow, the Little Crow, and the Crow Foot, by which the quantity of water over Crow Bar may be estimated with great precision:—

At high water, equinoctial tides, there are 23 feet on Crow Bar.

At three-quarters flood, or one-quarter ebb 19 "

At half flood, or half ebb ..... 13 "

At one-quarter flood, or three-quarters ebb 7 "

At low water ..... 3 "

but more with westerly gales and less with those from the eastward.

The Great Crow is nearly awash at five hours flood.

The Little Crow is awash somewhat previous, to four hours flood, or after two hours ebb.

The Crow Foot is nearly awash at one quarter flood, or three-quarters ebb.

The anchorage in St. Mary Road lies between the Isle of St. Mary and that of Samson, and there are five distinct entrances thereto: one between St. Mary and St. Agnes Islands, called St. Mary Sound; a second between St. Agnes and Annet, called Smith Sound; a third between St. Mary and St. Martin, through Crow Sound, over Crow Bar; a fourth between St. Agnes and Samson Island, called Broad Sound; and the fifth, called the North Channel, between the Mincarlo Rock and the Nun Deeps.

To sail into St. Mary Road through St. Mary Sound, bring the Great Minalto Rock directly in one with the north-eastern side of Mincarlo Rock, which will carry you in the fair-way between the Woolpack Rock to the eastward and the Spanish and Bartholomew Ledges to the westward; continue this course until the white day-mark on St. Martin opens to the westward of Bants-Cairn Point, when you may steer directly for the anchorage N. by E.  $\frac{1}{2}$  E. The best position for anchoring will be found upon the following intersection, viz., Hangman Island its own breadth open to the northward of the Nut Rock, and distant from the latter one-third of a mile south-eastward. Here you will find 4 and 5 fathoms water. The most approved method of mooring is N.W. and S.E., so as to ensure an open hawse with westerly winds. Peninnis Head and the Stevel Rock are both bold close-to; but the Woolpack projects off from St. Mary nearly one-fifth of a mile, this latter rock appearing a little before low water; the Bartholomew Ledge dries nearly at low water; and there are but 5 feet on the Spanish Ledge at that period.

Broad Sound is mostly used by vessels from the south-westward, but is very dangerous to such as are not well acquainted with the marks and the set of the tides. Run in between the Bishop and the Crim, but nearest to the former: they are the westernmost rocks of Scilly, and partly above water. The leading mark is Nornour Island, its apparent length open northward of Bants-Cairn Point, about E.  $\frac{1}{4}$  N. In proceeding with this mark, the Gunner, Southward Ledge, and Le Jeffry, will be left to the northward, and the Old Wreck to the southward, and after passing them it will take you direct to St. Mary Road, where you may anchor as before. The Old Wreck is a sunken rock, with 3 feet on it, lying about N.N.W., a quarter of a mile from Annet Head, and N.W. by W.  $\frac{1}{4}$  W. from the Great Smith.

At the Bishop, and also at the Crim, the flood tide sets to the north-westward during the first half hour, and afterwards east through St. Mary Road.

The North Channel is as dangerous as Broad Sound to strangers. The best mark is St. Agnes Lighthouse in one with the Great Smith till the leading mark for Broad Sound comes on as above.

Crow Sound lies between St. Mary's on the west and the Eastern Isles on the east. Being dangerous should never be attempted by a stranger, except on an emergency, and then only at tide time. In the middle of the Sound is a dangerous flat called the Flats, to the westward of which is Crow Bar, joining St. Martin's with St. Mary's Flats, which partly uncovers at low water. The bar is narrow, with 4 feet at low and 14 feet at high water neap tides.

When Toll's Island is open of Insidgen Isle and bearing S. by E.  $\frac{1}{2}$  E. you are to the eastward of Crow Bar; and to the west when Carn Morval Point, on the west side of St. Mary's, will be seen within Creeb Island S.W.  $\frac{1}{2}$  W.

With northerly, north-easterly, and southerly winds, vessels may anchor on the east side of Crow Bay in 4 or 5 fathoms; but with easterly or south-easterly winds the place is dangerous. The mark is the Nut Rock a little open to the southward of Great Crow Island.

The tide sets out to the S.E. at three-quarters flood, and at three-quarters ebb runs back to the N.W. from the entrance of the sound to the bar, where the tide is met which sets into St. Mary's Road.

To the west of St. Agnes is Smith's Sound, the water deep, but narrow and dangerous. From the southward you leave St. Agnes on the starboard side, and all the western craggy rocks and islands on the larboard. Keep the Castle Bryer (a high rock westward of Bryer) on with the Great Smith, another rock to the N.W. of St. Agnes. With this mark run until near the Great Smith; then towards Annet Island, give it a berth on the larboard side; afterwards steer away for St. Mary's Road.

New Grimsby, although small and narrow, is an excellent harbour. You enter between the two small islands of Tresco and Bryer from the northward. Just off the Point of Tresco are two rocks, always above water, called Kettle and Kettle-bottom. You sail in, keeping your starboard headland close on board. The anchorage is opposite Hangman's Island, a round-peaked island within the harbour, close over to Bryer, in 5 fathoms.

The west side of the entrance to Bryer, called Shipman Head, is bold-to. Blockhouse Point on Tresco, on the eastern side, has a blockhouse upon it, and has a rock close to it. You are clear on the west of Kettlebottom and other rocks, when the Castle of St. Mary's is open of Blockhouse Point and bearing S.  $\frac{1}{2}$  W. At Hangman Island you will find 16 feet at low water; and here, if you moor with a bower anchor, and a hawser to the rocks, no wind or sea will hurt you.

With the wind fresh from N.W., N. or N.E., it is difficult to get out of New Grimsby, but with such winds there is a passage at tide-time over Tresco Flats into St. Mary's Roads, and thence to sea.

Old Grimsby, St. Helen's Gap, and Tean Sound are narrow and intricate, pretty safe, and tolerably good anchorages; but should not be attempted without a pilot. For small coasting vessels, or such as may take the ground, both St. Helen's Pool and Old Grimsby are good places. You will find 12 to 8 feet in Old Grimsby, low water spring tides. The entrance from the northward is deep, when in, completely land-locked, and you may go out to sea with any wind.

To the southward of Scilly and about  $10\frac{1}{2}$  miles from St. Agnes Lighthouse is a bank, laid down by Admiral Knight as having 19 fathoms on it, bearing from the lighthouse S.  $\frac{1}{4}$  W. Near this bank, to the northward, Sir Edward Codrington, in

the "Caledonia," gained soundings in 20 and 25 fathoms, the latitude  $49^{\circ} 45'$ , St. Agnes Lighthouse bearing N. by E.  $\frac{1}{2}$  E., and the eastern extremity of St. Mary's Isle N.E. by N.

**Thompson's Rock.**—It is also reported, that about 3 leagues east of St. Agnes, a rock was discovered by Captain Thompson, of the ship *Betty*, in 1775, but as, since that time, nothing has been seen of it, its existence has been doubted, especially as so many vessels are constantly passing in the vicinity of that supposed danger. Captain White says, "I have made many attempts to discover the situation of this rock, under almost all circumstances, but have not elicited the least symptom indicative of its position: I do not, however, take upon myself positively to deny its existence, but I entertain strong doubts on the subject." On the 14th of May, 1833, the schooner *Isabella*, John Ramsay, master, from Bilboa to Liverpool, steering N.E., with a fresh S.S.W. gale, and a heavy swell from the N.W., passed within 50 yards of a rock, which was seen four times as the sea dipped: it resembled a hay-rick covered with sea weed, and had an open crack down the middle. At this time St. Agnes Lighthouse was set W.N.W.  $\frac{1}{2}$  W. about 10 miles; and if really St. Agnes, this must have been Thompson's Rock; but as the weather was hazy, it is possible that the sea-mark on St. Martin was mistaken for the lighthouse, in which case, a small error in the bearing would allow it to have been one of the Seven Stones.—Hydrog. Office.

The Seven Stones are a cluster of very dangerous rocks, lying, as it were, nearly in the fair-way between Scilly and the Lands-end. The north-westernmost of which, the Pollard, bears from the day-mark on St. Martin E.N.E.  $\frac{1}{2}$  E., and is distant therefrom 7 miles. From the Telegraph on St. Mary, the Pollard bears E.N.E.  $\frac{1}{2}$  E., distant  $9\frac{1}{2}$  miles, and  $14\frac{1}{2}$  miles from the Longships Lighthouse in the direction of W.N.W., and is consequently in latitude  $50^{\circ} 2' 23''$  N., and longitude  $6^{\circ} 6' 47''$  W. The Pollard appears at half ebb. The South Stone is two-thirds of a mile from the Pollard, in the direction of S.S.E.  $\frac{1}{2}$  E., and appears at five hours ebb. There are several other sunken rocks in the vicinity of these two, particularly to the northward and eastward of the Pollard, and to the westward of the South Stone: the former are generally denominated the Town, and they partially appear between the period of four hours ebb and low water; the latter have no particular designation. The whole of this group are very steep; there are 38 and 40 fathoms water, at the distance of one mile only, on all sides. The only marks for the position of the Pollard, which can be rendered conspicuous or intelligible to a stranger during the day, are, viz., the Telegraph Tower on St. Mary in one with the north-western end of Nornour Island, or Bant's Cairn Point open to the eastward of Carniweather Point; and the marks to avoid all these rocks are as follows:—the Telegraph Tower on St. Mary open to the eastward of the easternmost Cairn of Great Ganilly, (it will be also open at the same time to the eastward of the remarkable conical-shaped rock called Hanjague or Hinjack,) and the Telegraph shut in to the westward of Carniweather Point, though its parapet will still appear over the land between the said point and the day-mark; the former mark will lead half a mile to the south-eastward of the South Stone and of the rocks near it; and the latter will pass half a mile at least to the westward of the Pollard and the rocks in its vicinity.

The best, and indeed only safe method, during the night, is not to bring St. Agnes light more westerly than W. by N., by compass, when navigating to the south-eastward of these rocks; and, when to the north-westward of them, not to bring the light more westerly than south-west, by compass, divested of allowance

for local attraction); and let it be here recollected, that on both the above bearings the light will appear clear and bright, whereas, if it is brought at all to the westward of either limit, and the eye be not elevated more than ten feet above the surface of the water, it will be partially eclipsed by the Blue Cairn on St. Mary in one instance, and by the look-out Cairn on the western end of St. Martin in the other. In stormy weather the sea runs mountains high on these rocks, breaking prodigiously, and exhibiting a scene terrific beyond description. The depths of water at equal distances northward and north-westward of Scilly and the Seven Stones are nearly the same, as well as the quality of ground.

In very fine weather the objects on the Lands-end may denote the position of the Seven Stones; for instance, the two Churches of St. Buryan and Sennen in one will pass over the rocks to the north-eastward of the Pollard, and about half a cable's length distant therefrom.

The navigation of the Scilly Islands is now rendered much more simple. A light-vessel has been moored near the Seven Stones. She carries two lights: one on the foremast 20 feet, and one on the mainmast 38 feet above the level of the water. She lies in 40 fathoms, about  $1\frac{1}{2}$  miles E.  $\frac{1}{2}$  S. from the Pollard Rock, and about the same distance E. by N. northerly from the South Stone; St. Martin's day-mark bearing W. by S.  $8\frac{1}{2}$  miles, the Longships Lighthouse E.S.E. 13 miles, and the Wolf Beacon S.S.E.  $\frac{1}{2}$  E.  $12\frac{1}{2}$  miles.

The tide of flood on the western coasts of England may be considered as beginning at the Land's End near the Longships, where the stream divides, one part setting to the northward and the other to the eastward; and it flows, on the full and change of the moon, at half-past four. It here sets nine hours to the northward and only three to the southward. At the Wolf Rock and Rundlestone it flows at four hours and three quarters. Without the Wolf Rock, in the offing, the tide runs to the eastward, until it is half ebb by the shore; and, when it is half ebb in Mount's Bay, the stream at the Land's End begins to run to the northward. At first it sets to the N.W., and continues to alter until it comes to the N.E., when it is high water by the shore. During the flood the stream at the Land's End sets from the southward nearly nine hours; and, in most places, it continues to run about eight hours. Between the Land's End and Scilly the ebb runs only between three and four hours; this, if not attended to, may prove dangerous. To the southward of the Wolf Rock, the flood, during the first three hours, sets nearly E.S.E. When it is half ebb, by the shore, in Mount's Bay, the ebb tide on the Wolf Rock begins to set to the westward, and continues to run for six hours or until it is half flood by the shore. South-west winds and stormy weather generally raise the tides to the height of 30 feet, common spring tides about 20 feet, and neaps from 13 to 10 feet. Northerly winds sometimes keep the tide back an hour or more, and S.W. winds make it flow an hour longer; it is, therefore, highly necessary that proper allowance be made for such winds, especially at their beginning, and when they blow strongly.

In Mount's Bay the tide runs in various directions, as already observed. Here, as well as at the Land's End, it flows at 40 minutes past four. In the bay springs rise 17 and neaps about 9 feet; but without it springs rise 18 and neaps 12 feet.

At the Lizard it flows at 55 minutes past four and at Falmouth at a quarter past five o'clock. Here high spring tides rise about 18 and neaps 12 feet. But they are much influenced by prevailing winds. In Falmouth Harbour spring tides run up at the rate of  $2\frac{1}{2}$  knots, and neaps one knot, or a little more.

At Fowey it flows at a quarter past five; springs rise about 17 feet and neaps

8 feet. Off this place, and about 3 leagues to the south-eastward of the Deadman, the stream continues to run to the eastward until a quarter past 8 o'clock. Off the Lizard, at the distance of 3 or 4 leagues, it continues to run until nearly three quarters past seven; and here the easterly and westerly streams run equally six hours each.

Scilly.—The tides, at about two leagues to the southward of Scilly, appear to set straight, and run for equal spaces of time, to the eastward and westward; but nearer to and among the islands and rocks, they are subject to a variety of inflections and inequalities.

The flood tide sets from the south-westward, around the islands on the east and the west, and the two streams meet on the north-east as indicated by the arrows in the chart.

Through St. Mary's Sound the tide sets from the southward from half ebb to half flood, and from the northward from half flood to half ebb. The flood sets regularly through St. Mary's Road from Broad Sound, and over Crow Bar, through Crow Sound, to the eastward; the ebb to the contrary, but it is not very strong.

Through the north-west channel the flood sets into St. Mary's Roads and the ebb contrary.

The tide that comes in from Broad Sound on the south-west sets through St. Mary's Road, for the east end of St. Martin's Island, where it meets the tide at four hours flood, coming round St. Martin's Head, which makes the race of Hanjague or Hinjack; this prevailing, sets away S.W. by S. as far as Menawethan Island, where, meeting Crow Sound tide, which sets out S.S.E., it makes a great race with spring tides, and both go off to the southward together.

In the harbour of New Grimsby the tide, at low water, sets in for an hour and a half, then sets out for three hours, turns and sets in four hours and a half, till it is half ebb; then it turns and runs out the other three hours till low water. But, between the islands of Samson and Bryer, the tide sets in 8 hours from the westward, from low water till two hours ebb, and then runs out to the westward till low water.

At half flood the tide from New Grimsby sets over the flats towards St. Mary's, until half ebb, and from St. Mary's Road, out at New Grimsby, from half ebb to half flood.

Into Old Grimsby, St. Helen's, and Tean Sound, the tide sets nine hours, from low water to half ebb by the shore; and it sets outward from the same for three hours only; that is, from half ebb to low water.

It is high water generally, among the islands, at about half past or 40 minutes past four, on the full and change, when the ordinary rise is 18 or 20 feet. But when it blows hard, or has done so, and the wind is out to the southward, the tide flows about an hour longer. Northerly winds keep it back in the same proportion.

## SECTION IX.

## LAND'S-END TO MILFORD, INCLUDING THE BRISTOL CHANNEL.

Pendere Tau, or Pendere, is three miles from Cape Cornwall, and from the former St. Ives Bay is 9 miles. Three small rocks lie off Pendere.

Three-stone Ore rocks are always above water and steep-to. Trevalgen Point lies from these rocks E.  $\frac{1}{2}$  N., distant 6 miles; westward of this point about three-quarters of a mile lie a ledge of rocks called the Carricks; the coast is otherwise steep-to, except at Gurnard's or Gurnet's Head, nearly half-way between, where there are two or three rocks. From Trevalgen Point to St. Ives Point the course is E.S.E.  $2\frac{1}{2}$  miles.

Godrevy Head, the eastern point of St. Ives Bay, bears from St. Ives Point E. by S., distant  $3\frac{1}{2}$  miles. Godrevy Island lies N.N.W. about half a mile from Godrevy Head; and in the same direction, about a mile from Godrevy Island, is a reef of very dangerous rocks called the Stones, over which the water usually breaks, and many of them appear at half ebb. Godrevy Island is steep-to, having a good passage of 5 or 8 fathoms between it and the Stones; to clear the latter, on the north side keep Gurnard's Head open. The course into the bay is about S.  $\frac{1}{2}$  W. Good sandy ground; good anchorage.

On the west side of the bay is the town of St. Ives, where there is a pier; small vessels lying aground, secure from all winds, large vessels lying outside of it in 6 or 7 fathoms. It is not much frequented, as a heavy sea is thrown in by northerly winds. Vessels overtaken by northerly winds may run into a small river at the bottom of the bay called Heyl or Hayle, two miles S.E. by S. of St. Ives, at high water there is from 10 to 12 feet, the western side being the deepest; as soon as in you will see a deep bay or creek, in which, by steering east, the vessel may be secured upon a smooth flat sand.

The following paragraph appeared in the Newspaper of Dec. 26, 1817:—"In the dreadful storm of Monday night last, a fine new brig of about 200 tons, called the Elizabeth, of Yarmouth, from Cork to London, laden with provisions, was driven on shore upon the flat sand, between the bar of Hayle and Carrock-gladden Point, in the port of St. Ives. The crew have been saved, with the exception of the mate, who, it appears, was drowned by imprudently getting into the main rigging; and the greater part of the cargo having been landed, it is confidently expected that the vessel will be got off with very little damage. It ought to be generally known to seamen, that vessels driven into St. Ives Bay, by violent north-westerly winds, may escape a destruction that appears inevitable, by running upon the beach where the brig now lies. It is easily distinguished by being to the westward of the opening of Hayle Harbour, and directly under the sand-hills, where Lelant Church Tower stands; it is, in fact, 'dead to leeward,' in the wind alluded to; a circumstance which induces mariners to avoid it, and, keeping their wind as much as possible, with the hopeless prospect of reaching the pier, they perish either upon the rocks or steep sands in the western part of the bay. As often as accident or local knowledge has thrown a vessel upon the beach in question, the lives and cargo have been saved, and the ship but little damaged."

Between St. Ives and Trevoise Head the coast forms in bays and high cliffs, inter-

spersed with sand hills. St. Agnes or St. Ann's Head bears from Godrevy Island E.  $\frac{1}{2}$  N. 8 miles; is steep-to, and has a small pier on the east side.

Portroth is between the two former, has a small pier and basin, used by vessels discharging coals or taking in copper, which, with a ground swell in the channel, vessels cannot enter at neap tides.

Trevoze Head bears from St. Agnes' Head N.E.  $\frac{1}{2}$  E.,  $15\frac{1}{2}$  miles. Off St. Agnes' Ball or Keonberianack, nearly a mile, are two remarkable rocks called the Man and his Man, distant 11 miles from St. Ives, E.N.E.  $\frac{1}{2}$  E.

Carter's Rock lies off Holywell,  $4\frac{1}{2}$  miles from the two last-named rocks, N.E. by E.  $\frac{1}{2}$  E. At a mile N.E.  $\frac{1}{2}$  N. from Carter's Rock, off two small isles, is a sunken rock, with 16 feet over it, lying N. by W. from Pentire West Point. A small sandy bay lies between Pentire and Holywell Head.

The Gunnel is a small creek, fit for small vessels only, situated between Pentire West and Pentire East Points, the entrance close under the latter point. Towan Head lies  $1\frac{1}{2}$  mile from Pentire East Point, has a small pier which will only shelter about two small vessels, off the ground is foul with rocks for a quarter of a mile out.

From Towan to Mawgan Point, a distance of 5 miles, the coast is sandy; a mile distant from Mawgan Point, S.W., are sunk rocks and broken water. Trevoze Head bears from Mawgan Point N.N.E.  $\frac{1}{2}$  E. distant  $2\frac{1}{2}$  miles. Trevoze Head appears as a round hill, which at a distance gives it the appearance of an island: the Quives, or the Cow and Calf Rocks, lies to the westward of it. From this head to Steepard or Stepper Point, on the west side of the entrance to Padstow Harbour, the distance  $3\frac{1}{2}$  miles, bearing E.  $\frac{1}{2}$  S.

Within Trevoze Head is Polventon or Mother Ives Bay, in which vessels may shelter until they can run into Padstow Harbour; this little bay lies 3 miles from Padstow Harbour W.  $\frac{1}{2}$  N. With the wind from South to W.N.W. vessels may anchor in from 5 to 7 fathoms, good sandy ground. With northwesterly winds, haul close round the small rocks called the Madraps, on the east side of the head, anchoring within a cable's length of them, the westernmost of them bearing about N.N.E. If caught on the coast by a N.W. gale, and not able to get off, you may come to here, and wait the flood until safe to run for Padstow.

From Trevoze Head to Steppey Point, the west of Padstow Harbour, the bearing is E.  $\frac{1}{4}$  S., distant  $3\frac{1}{2}$  miles. From the same head to Tintagel Head, E.  $\frac{1}{4}$  N.,  $12\frac{1}{2}$  miles; and Hartland Point N.E. by E.  $\frac{1}{2}$  E., 34 miles.

The Gull is a bold rock  $2\frac{1}{2}$  miles E. by N. from Trevoze Head, which lies with a beacon upon Stepper Point, bearing S.E. by E.,  $1\frac{1}{2}$  mile distant. A ledge lies  $\frac{1}{2}$  of a mile S.  $\frac{1}{2}$  W. from the Gull, and nearly the same distance from the shore; it is called the Gurley, over which is only 4 feet at low spring tides. From the Gull, about a mile S.E. by S., and half a mile from shore, is a sand-bank, having only 9 feet water. Between the Gull Rock and the shoals, the leading mark is the second islet of the Quives well open of Trevoze Head, which mark may be kept on to the entrance of Padstow.

The Newland is another islet, lies  $2\frac{1}{2}$  miles east of the Gull, and N. by W.  $\frac{1}{2}$  W., half a mile from Pentire Point. Between the Newland and the shore, about one-third of the way, is a rock called King Philip, having 3 feet water at ebb tide. The Mole lies to the eastward of Pentire, and small rocks called the Ramps to the west of the Mole.

Padstow Harbour.—The entrance to the Harbour of Padstow is bounded by Stepper and Pentire Points; they bear from each other about N.E. and S.W. and

and are distant 2 miles. Off Pentire Point N.N.W. distant nearly a mile, is the Newland Rock, high, large, and steep-to; and S.E. of the Newland is a sunken rock called the Viller, having between it and the Newland, King Philip's Rock, the Roscarrock Rock near Pentire Point, another rock called the Mole, to the eastward, and the Rumps, &c., close to the point, making the channel between the Newland and Pentire Point somewhat hazardous; the best passage, therefore, to Padstow will be between the Gull and Newland, where midway you will have 15, 12, 9, 8, 7, and 6 fathoms water, gradually decreasing as you approach the entrance of the harbour. A conspicuous tower or day-mark has been erected on the high land, a quarter of a mile to the westward of Stepper Point, and two miles from the entrance there is a pier where vessels may lie aground in safety.

It frequently happens in the winter season with gales of wind at N.W. and N.N.W., that ships are lost on this coast for want of a proper knowledge of the Harbour of Padstow, which is a good and safe place for ships of large burthen, having never less than three fathoms at low water in the channel, which, in the narrowest part, is seventy fathoms wide, and is bounded on the west by a steep cliff, which is bold to, and on the east by the Dumber Sand, which dries with the last quarter of the ebb, and ought to be carefully avoided. In approaching the harbour from the offing, steer in for the beacon or day-mark, passing between the Gull and Newland Rocks, or if circumstances require, you may sail between the Gull and Trevoise Head, keeping the Quies a handspike's length open of Trevoise Head, to avoid the Gurley. When within half a mile of the day-mark you will perceive Stepper Point, on the extremity of which is a pole, with a barrel thereon.

On entering the harbour, keep very close to Stepper Point, to avoid the Dumber Sand, on the outer end of which a red buoy is placed, which must be left on your larboard side. If the tide is ebbing, keep a press of sail until within the entrance, and have an anchor ready: run in, and should the eddy winds from the hills take the sails aback, then let go the anchor, by which time the boats will be ready to board from the shore, and render the necessary assistance. The best time of tide to enter the harbour is from half flood to high water, and it should not be entered from half-ebb to quarter-flood, except under circumstances of necessity.

A little within the entrance of the harbour, mooring buoys are placed, nearly in the mid-channel, and on shore, capstans are erected, posts fixed at proper intervals, and warps, boats, pilots, and other men, are in readiness to render assistance to vessels entering the harbour. The harbour may be occupied at all states of the tide, in smooth water, with a free wind, but it is recommended to ships of large draught to wait till about half flood, and when in the harbour-cove, which is about a mile within the point, they may lie on mud, or ride afloat, as occasion requires. This harbour is a most excellent outlet for ships bound to the northward or eastward.

In sailing out to the northward, you may go between Pentire Point and the Newland, but beware of the rocks under water which have been already described. To the eastward, and near the shore, is an island or rock, called the Mole, and following the shore, you will meet with the small Cove of Portquin.

Port Isaac.—One mile and a half to the eastward of Portquin is Port Isaac, a fishing place, frequented by vessels trading to Bristol, Wales, Ireland, &c. Ships of 200 tons go in at high water, and run on the sandy shore, where they lie safe from the power of the sea. It is principally used by fishing vessels.

About 3 miles from the entrance to Port Isaac is the Otteral Rock, which always appears above water, and is almost a quarter of a mile from the shore. One mile and a half further is Tintagel Head, and to the eastward of Tintagel Head, 2½



miles, is the Cove of Farrabury. The coast all the way from Pentire Head to Hartland is rocky and steep, and you may sail along within half a mile of the shore in from 6 to 11 fathoms, free from any danger. About 7 miles from Farrabury there begins a flat, which spreads itself before the coast for a considerable distance; this is called Bude Bay, in which there is little or no tide; this flat is shallow, having from 3 to 1 fathom, drying as you approach the shore.

From Pentire Point to Port Isaac the distance is  $4\frac{1}{2}$  miles, and from Port Isaac to Hartland Point  $29\frac{1}{2}$  miles, the course being N.E.  $\frac{1}{4}$  E.

From Cape Cornwall to Hartland Point the course is E.N.E., and distance 24 leagues; and from St. Martin's Day-mark to Hartland Point the course is E.N.E.  $\frac{1}{4}$  E., and distance  $30\frac{1}{2}$  leagues.

Extract of a letter from a commander of the royal navy, dated Padstow, September 16, 1829, addressed to J. Bennett, Esq., the secretary of Lloyd's:

"The great loss of lives and property on this coast will, I trust, be a sufficient apology for my troubling you, and requesting that you will be pleased to lay before the committee a few observations that I have to make respecting the many vessels wrecked on this coast, and the greater part of them at or near the entrance of this harbour: no less than fourteen this year.

"Of course it is well known that there is no harbour on the north coast of Cornwall, from the Land's end to Hartland Point, but Padstow; but it is not so well known that this harbour should never be approached in a gale of wind but with a coming tide, or, at the latest, to enter the harbour within the first hour's ebb, and then to keep close to the western shore. When I say close to the western shore, I mean within two or three lengths of the vessel from the rocks at Stepper Point, carrying all the sail possible up to the moment that the wind begins to baffle within the point, when an anchor should be let go; veer out about 20 fathoms of cable, sheer toward the rocks, and let go the second anchor, and veer to about two-thirds of a cable on the first anchor; furl the sails, and, if possible, run a hawser to the rings. And I would earnestly call the attention of the committee to these observations, for they are not only mine, but the respectable masters of vessels of the place will corroborate what I have above stated, and ought (not only for the advantage of the underwriters, but the saving of a number of lives) to be made known by every means that can be devised, and more particularly in the printed sailing directions for the coasts, which decidedly give too favourable a description of the access to the harbour, and is not sufficiently explicit in its direction in keeping close to the western shore. These instructions say also—'The harbour may be used at all times of the tide, with the wind free, from N. by W. to E.S.E.' Now this, as a sailor, I positively deny; for I was, with many others, an eye-witness to the wreck of three vessels at the mouth of this harbour on Thursday, and a fourth all but gone, by running for it at an improper time of tide, and this with the wind right at N. by W. The want of knowing these facts has been the cause of the loss of many valuable lives and hundreds of thousands of pounds of property.

"A sloop that kept too far off the western point was swallowed up by a sea, and all hands perished, before she touched the ground; another schooner might have been saved had there been a hawser a little within the point, to have run to her the moment she got into the baffling winds, and this, in my opinion, would be the means of saving many a vessel, were it adopted. Another schooner, running for the harbour, prudently altered her course and beached in Hillbay, and saved their lives, as also did a sloop at Port Quin, and another at Widemouth Bay.

"As a sailor, I make another observation, with great regret, and that is, that out

of seven vessels on Thursday, and twelve on Friday, (that ran for this harbour and arrived safe,) I can observe but one that has two cables bent; this is inexcusable in the masters of those vessels in running for a lee shore in a gale of wind. One man had the honesty to tell me that the vessel he sailed in (and was one of those that arrived on Thursday) had, never since the month of April last, more than one cable on board. This, I think, goes far to show that some people must be remiss in their duty. You will please to observe that I make these remarks from no other motive than justice and humanity."

Hartland Point, the N.W. extremity of Devonshire, lies 24 leagues E.N.E. from Cape Cornwall, and  $30\frac{1}{2}$  leagues E.N.E.  $\frac{1}{4}$  E. from St. Martin's Head, Scilly. From Hartland Point to Baggy Point, the bearing and distance are E.  $\frac{1}{4}$  N. 12 miles: between, the coast forms a capacious and deep bight called Barnstaple or Bideford Bay. The land of Hartland Point is high, and directly off it lies a ridge of rocks, extending about one-third of a mile from shore, on which the sea almost always breaks, and must therefore be carefully avoided. About a mile to the eastward of the Point is an anchorage, called Shipload Bay, but without shelter.

Clovelly Pier, which is small, and fit only for protecting fishing boats, lies about  $4\frac{1}{2}$  miles S.E.  $\frac{1}{4}$  E. from Hartland Point. There is an anchorage off the pier, where vessels bound to the southward may lie sheltered, during the summer season, from southerly winds as far as S.W., in 8 or 9 fathoms water; the anchoring marks are, the easternmost house but one on the beach in a line with the pier, and the land to the westward shut in with Gallendy Bower, which is also to the westward of Clovelly, and has a tuft of trees on it.

About two miles E.S.E. from Clovelly pier lie the Buckish Rocks, called also the Bucks and Gore; they are directly off a summer-house on the hill, and about half way between Clovelly and the village of Bucks. The land to the westward open of Gallendy Bower clears them on the north side. The coast hence, trends on the north-eastward 6 or 7 miles to Barnstaple or Bideford bar: the shore is moderately bold, excepting off a white house a little to the westward of Shepherd's Hill, where at a short distance from the shore, there is a sunken rock, on which the sea breaks at low water.

Bideford Harbour.—Rock's Nose is remarkable as the termination of the high rocky coast of Barnstaple Bay; as from it the shore stretches five miles N.E. by N. with a succession of low sandhills, and the extensive flats known as Northam and Braunton Burrows, terminating at Downend Bluff. The gap and bar of Barnstaple divide the flats into two parts, and here the waters of the Taw and Torridge, the rivers of Barnstaple and Bideford, fall into the sea. The bar, of coarse sand and gravel, is variable, and extends outward nearly a mile and a half from the high water entrance between the Burrows.

Barnstaple or Bideford Bar lies 11 miles E. by S. from Hartland Point: it has a sufficient depth of water on it at half flood, for ships of 300 tons burden; but it is dangerous to a stranger, because there are shoals a long way out on both sides. With winds from S.W. to N.W., and blowing hard, there is a heavy sea on it; and even with moderate winds from these quarters, a ground swell breaks over it. At low water spring tides there is not more than 2 feet on it. The vertical rise is 25 feet: neap tides rise no more than 12 feet.

The shoal which constitutes the bar rises suddenly from 3 fathoms on the outside, as well as from a pool within, of the same depth, to a depth of only 6 feet, and this to the extent of a mile. The breadth of the channel, near the entrance, is contracted by the South Tail, a patch of sand, on the starboard side, which uncovers

four feet above the level of low water. Within this bank, on the same side, is the Middle Ridge, a bed of gravel, forming the south side of the channel, and rising 12 feet above low water; and on the opposite side of the passage is the High Patch of the Crumbles, which rises 10 feet at the same time.

The leading mark over it, is a field in the form of a shoulder of mutton (situated just above a small wood, and exactly under the lowest dent or saddle of the inner land), just on with or a little open of Hairy Point, bearing S.E.  $\frac{1}{2}$  E. or nearly so. As soon as Kenny's summer-house, or westrecot trees, which stands to the S.W. of the entrance, begin to shut in, you will be entering on the bar. Proceed with the leading mark on until Tapeleigh House comes in a line with the easternmost house in Appledore, bearing about S. by E.  $\frac{1}{4}$  E.; you will then quit the other and run with this mark on until a summer-house, southward of Appledore, comes on with another, bearing about S. by W.  $\frac{1}{4}$  W.; and then steer with these in a line until Instow Church comes on with the middle of a large field just above it, bearing about S.E. by E.; with this latter mark you should proceed until you arrive in the Pool, north-eastward of Appledore, and there anchor with Instow quay and mill on with each other, bearing about S.  $\frac{1}{4}$  E. Here the harbour divides into two branches: the easternmost runs up to Barnstaple and the other to Bideford. Should circumstances make it necessary to anchor at the Crumbles the mark is Northam Church and a tree in one, bearing N.E.; and the best water is close to Hopper Ridge, which is steep-to and shows itself.

**Barnstaple Bar Lights.**—The corporation of Trinity-house, London, has caused to be erected two beacon towers, to serve as guides into the harbour of Appledore, by night as well as by day. One of these towers is built square, and stands upon the beach at Hairy Point; the other is octagonal, and stands upon Braunton Burrows at the distance of 312 yards within the square one, and bearing from it S. 49° E. by compass. On each of these towers a powerful light is exhibited from reflectors, from half flood to half ebb, or from the time that flood tide has risen to the height of 10 feet on the bar, until the ebb has fallen again to the same depth; and in the day time a red flag is hoisted upon the outer light tower from half flood to half ebb, being the signal for vessels to enter.

**N.B.**—On the days of the full and the change of the moon, it is supposed to be high water on the bar at 5 hours 30 minutes, subject to be sooner or later, as strong winds may blow from the W.S.W. or E.S.E.

### *Directions for Sailing over the Bar.*

Ships, in stormy weather, with the wind on any point between N.N.W. and W.S.W. should take care to have the Lights or Towers in a line when they enter the breakers, as the flood-stream sets strong across the entrance towards N.N.E. By keeping the lights on, they will run in safety (when over the bar) to a fair berth off the Middle Ridge, which will show itself on the starboard hand; and they will probably obtain a pilot (if in the day time) before they come near the Outer Light Tower; about 250 fathoms from which, with the lights still in one, the channel becomes very narrow, by reason of the S.E. or inner point of the Middle Ridge. At this point, and being still without a pilot, the lights should be gradually opened to the right, hauling over towards the Grey Sandhills, S., or S. by W., with a flood-tide. Before getting the length of the Stoney Beach at the southernmost point of those sand-hills, which is steep-to, it may be expected some assistance will be afforded to bring the vessel into a safe berth.

In December 1840, the Corporation of Trinity House caused two additional

buoys to be placed for the guidance of vessels navigating over "Barnstaple Bar :—" the outer one, a red beacon buoy, marked "Barnstaple Bar," is placed in the fairway, on the outside of the bar, in four fathoms at low water, with the high light tower, half its apparent breadth open to the northward of the low lighthouse, S.E.  $\frac{1}{2}$  S.; Hartland Point, W.  $\frac{1}{4}$  N.; Baggy Point, N.N.E.  $\frac{1}{4}$  E.; and Northam Church Tower, in line with the centre of a grove of trees, S.  $\frac{1}{4}$  E. The second is a red buoy, marked "Sprat Ridge," on the S.W. spit of the Sprat Sand, which dries at low water, with the high light tower N.E.  $\frac{1}{4}$  N., and Northam Church, S.W.  $\frac{1}{4}$  S.

But, if in desperate cases by night, in thick stormy weather, those who are entirely unacquainted, should, for the preservation of life, be constrained to run for the harbour, they have only to keep the lights in one, as before directed, until they approach the outer light to less than 200 fathoms' distance; then opening the high light to the westward of the low light, hauling over to the southward, and passing both lights, they must act as circumstances may require for their preservation. Being now in comparatively smooth water, they will endeavour to run in as far as they can, taking care not to get on shore under the steep cliffs at the west end of the town of Appledore; because, immediately under these cliffs the shore is rocky, and many limestone heaps lie there; or they may continue their course past the Stoney Beach, at Grey Sand hills, and run on shore on the mud at Skern.

Captain Denham has observed that, notwithstanding the Braunton lighthouses are so judiciously arranged as to insure the mariner a constantly adjusted line of direction that will lead him over to Barnstaple Bar in the deepest and clearest channel; yet the sudden violence of N.W. gales have so pressed vessels when hovering in the bay, (but which perhaps have borrowed too closely on the bar before rounding to, to wait for the necessary rise of the tide,) as to cause their driving into the outer breakers, with consequent total loss of life and property. It may, therefore, be well to know that, if any control is retained over a vessel so threatened, before finally striking, she should be urged toward the beach under Northam Burrows, as a Life Boat is kept in readiness on that side, which, to the great honour of the inhabitants, has already saved a number of lives.

From Barnstaple Bar to Baggy Point, it is 4 miles N. by E.  $\frac{1}{4}$  E., and thence to Morte Point it is 3 miles N.E.  $\frac{1}{4}$  E. Vessels working between Clovelly and Baggy Point should not stand nearer to the bar of Barnstaple than with a small tower on the hill to the westward of Northam, kept open. The Crumbles Shoal lies on the north side without the bar, and nearly dries at low water. Between the bar and the Down End, which is about a mile and a half to the southward of Baggy Point, go no nearer to the shore than two-thirds of a mile.

Baggy Point is a bluff land. From one half to two thirds of a mile, directly off it, there is a very large and dangerous rock, called Baggy Leap, on which the sea breaks at half ebb. Between this rock and the shore there is a narrow passage with 7 fathoms of water in it, but it should not be attempted by those who are unacquainted.

Morte Bay lies between Baggy Point and Morte Point, and affords good shelter from S. to N.E. by N.; the anchorage is at a moderate distance from the eastern shore in about 7 fathoms water. Here you may lie out of the strength of the tide, but you must be careful that you may not be caught here with a N.W. wind. The shore is nearly all a sandy beach, towards which the water shoals gradually; but there is a rock lying close to the shore on the S.W. side.

*Lundy Island and the South Side of the British Channel.*

**Lundy Island.**—About 10 miles north, a little westerly from Hartland Point; N.E. by E.  $\frac{1}{2}$  E. 25 leagues from Cape Cornwall; W.N.W.  $\frac{1}{2}$  W. 15 $\frac{1}{2}$  miles from Morte Point; and off the entrance of the Bristol Channel lies the south end of Lundy Island. This island extends N. by E. and S. by W. about 2 $\frac{1}{2}$  miles, is about half a mile in breadth, and of considerable height; upon it are the ruins of a fort, which once commanded the landing place, and of a chapel dedicated to St. Ann. There is but one landing place on the island, which is a narrow place near its S.E. point. At the northern end is a high pyramidal rock, called the Constable; to the westward of which are the Hen and Chickens, and to the eastward of it are the Seal Rocks. The Shutter Rocks lie off the S.W. extremity; and off the S.E. point, to the southward of the landing place, is the Rat Islet. About 2 $\frac{1}{2}$  miles N.E.  $\frac{1}{2}$  E. from the north end of the island is a small bank of 7 fathoms, with deep water all around it; this has such a sea on it when the tides are strong, as to render it dangerous to deep-laden vessels. On the S.E. side there is an indifferent roadstead, where vessels may lie in 6 or 7 fathoms water; and it is the more unsafe as the tide, during the last quarter of flood, varies to every point of the compass, so that it is very difficult to keep the anchor clear, but it now has the convenience of a mooring buoy.

On the S.W. side of the island is a lighthouse tower, which was erected under the order of the Honourable Corporation of Trinity-house, London, at the request of a numerous body of merchants, owners, and masters of ships interested in the navigation of the Bristol Channel, and first lighted on the 21st of February, 1820.

The tower is elevated 70 feet from the ground to the floor of the lantern, and thence to the vane at the top 19 feet. It exhibits two distinct lights—an upper and lower light; the uppermost light revolves in a horizontal row, illuminating the whole circle of the horizon every 2 minutes, and is 538 feet above the mean level of the sea; the lower light, placed 30 feet below the upper, exhibits a fixed and steady light, extending, in a westerly direction, from N. by W. to S.W. by compass. The upper light, from its great height, may be seen in clear weather at the distance of 29 miles. By this arrangement all vessels entering the Bristol Channel will be enabled readily to distinguish the lights on the Island of Lundy from all others in that vicinity.

The following particulars are from Captain Denham's description:—The upper lamps are elevated 567 feet above low water level, producing an intermittent light appearing bright for ten seconds, at intervals of 22 seconds obscuration; visible in clear weather, to an eye 10 feet above the water, 31 miles, and ranging round the compass. The lower light (fixed) may be seen to 29 miles; and a vessel hovering under the western side of the island at night, in order to avoid the ebb, will be clear of all straggling rocks so long as it is seen over the cliff.

In the Roadstead above mentioned, a vessel may find shelter from the winds from N.N.W. to S.W. in the depth of 11 or 12 fathoms; the best place is about midway between the middle point of the island and the S.E. point, with the north point just shut in by the middle point. In this place you will be so sheltered by the height of the island, that most of the flaws will pass over you: and the lights are not to be seen. You must be careful of a rock that lies about 25 fathoms off the middle point. There is, on the N.W. side of the Island, a Roadstead called West Bay, where vessels may find shelter from easterly winds, at about half a mile or more to the southward of the Hen and Chickens.

The Roads of Lundy present important advantages to vessels outward bound from Bristol, in case of adverse winds; and they are equally useful to homeward-bound vessels, in want of pilots or refreshments, and to such as may be unexpectedly driven into the mouth of the Channel by westerly gales.

The general anchorage is to the northward of Rat Isle. This islet appears like a low green hummock, jutting up from a gradual descent of the castle bluff, from which it is insulated a few yards only at high water. It lies at four-fifths of a mile east from the Shutter or S.W. Point, off which is a detached black rock. S. by W., about three cables' length from the east end of Rat Isle, is a sunken rock, on which, in March, 1829, the *Frances Anne*, Hicks master, struck, when the spring-flood had set in about an hour.

Midway between Shutter Point and the Black Rock is a temporary anchorage called the Rattles, which may be taken with easterly winds in 7 fathoms, out of the tide. From the cove a landing may be effected, but with difficulty.

Between Rat Island and the landing place is Lamatry, an intermediate hummock, forming the south-eastern extremity of Lundy. In rounding this hummock it should have a berth of a quarter of a mile, in order to avoid some rocky ground of less than 3 fathoms. Rat Island and Lamatry form the breakwater, which protects the anchorage from the western swell and flood-tide until the wind veers to the southward of S.W. Tibbet Point, which is a mile and a half more to the northward, in some measure also affords shelter till the wind veers eastward of north. In the cliffy curve between, small fore and aft rigged vessels may come to with the farm-house in the valley open and bearing west, and Rat Isle south, at a quarter of a mile from the landing place, in 7 fathoms, sand. From this spot they may clear Rat Island on a sudden change of wind to the eastward, so as to gain the lee of the island to the Rattles, or to Jenny's Cove, which is half-way up on the west side of the island, to the north of a reef called the Needles.

Tides about Lundy.—It is high water at Lundy, on the full and change of the moon, at 5 h. 15 m. Ordinary springs rise 27 feet, as shown hereafter. The stream of flood divides and branches northward and southward of the island at three miles west from the lighthouse bluff; the ebb stream likewise divides or splits at three miles east of it; but within that range the flood sets from north to south, along the west side of the island, the ebb yielding scarcely any stream there; nor till clearing the extremities of the island, has it any considerable effect. On the east side of the island, the ebb or southerly stream sets from half flood till low water, producing nine hours' southern set and three hours' northern, but with a velocity of not more than a mile an hour. At, however, the range of one mile from the extremities of the island, the strength of tide is 4 or 5 knots, decreasing to 3 knots on springs and 2 upon neaps, at an offing of 4 miles.

After once gaining a sight of this island, the approach may be known by the soundings and quality of bottom. At 15 miles without it, on the S.W., W., and N.W., there are 40 fathoms, with sandy bottom, shoaling thence to 26 fathoms, rocky bottom, at 5 miles south from the island; to 29 fathoms, gravel, at 5 miles to the S.W.; to 22 fathoms, fine sand, at 5 miles to the West; to 27 fathoms, with fine gravel, at 5 miles to the north; and to 24 fathoms, with broken shells, at five miles to the east. Thirty-five fathoms, sandy bottom, is the deepest water between Lundy and Milford, and there is less within or to the eastward of that line; so that the navigator may be assured of being without or to the westward of the Bristol Channel so long as he does not shoalen his water below 40 fathoms, allowing for a rise and fall in tide of 4 fathoms.

On approaching the island it is requisite to observe that the north end only requires a berth of three-quarters of a mile.

A stranger from the west or south-westward, if bound to Bristol, should take a pilot at Lundy; they are always on the look out upon the hill, and their boats always ready on the eastern side of the island.

Morte Point, already spoken of, is the south-westernmost point of the Bristol Channel; it lies nearly 3 miles N.E.  $\frac{1}{4}$  E. from Baggy Point, and has a ledge of rocks extending about a quarter of a mile to the westward. Near the end of this ledge is the Morte Stone, on which the sea generally breaks, excepting about high water; be sure to give the point a good berth in passing, in order to avoid these dangers.

Bull Point lies a mile and a quarter E.  $\frac{1}{4}$  N. from Morte Point; the coast between forms a small bay, in the middle of which is a sunken rock, at about a cable's length from shore; this rock will be avoided by keeping the land to the eastward open to the northward of Bull Point.

Ilfracombe is a little pier harbour, drying at low water, and even at some distance without; yet it is considered a convenient place to run into when a vessel is unable to fetch the harbour of Bideford. It lies nearly 5 miles to the eastward of Morte Point, and has a lighthouse on the western side of the entrance, in which a miserable light is kept from Michaelmas to Lady-day. At the pier head with spring tides, there is 24 feet at high water; the harbour is easy of access at all times between half-flood and half-ebb, and boats are always ready to assist when the weather will permit. On a high point near the cove is a summer-house, and outside of the pier there is a roadstead, with good anchorage, in from 5 to 8 fathoms water; there is also a buoy off the entrance of the harbour, for the purpose of warping vessels out.

In advancing to the eastern side of the harbour's mouth, you must be cautious not to advance too near the rocks stretching to a cable's length from the base of Hillsboro' Hill; on the opposite side, when entering, you almost brush the rocks; and, in fact, it is necessary to round them sharply, in order to shoot in with south-west and westerly winds, which blow directly out from the pier. The pier head leaves just a suitable opening between it and the main.

The spot for shelter, without the pier, is a sandy space between the back of the pier arm and Warphouse Point. Here, from two hours flood to four hours ebb, is a depth of nine feet and more water, open only to the N.E., which does not bring in much sea. Here forty coasters may berth at a time on good ground of easy descent, composed of mud and sand. Along the pier side, at half flood, is a depth of nine feet, increasing upon high water neaps to 14 feet and 11 feet within. Spring tides within the pier rise from 19 to 24 feet.

Lantern Hill is on the western side of the entrance, and upon this hill is an old chapel, resembling a white-washed cottage, which, from Michaelmas to Lady-day, is lighted at night with candles, but without reflectors, affording a light that cannot be seen more than a mile off in clear weather, being originally intended only for the use of the herring-fishers.

Through the opening called Wildersmouth, which is just to the west of Capstone Hill, the town of Ilfracombe may be seen. The land between Leigh and Wildersmouth is very high, and called High Cross. To a stranger, from the westward, it is difficult to make out the harbour of Ilfracombe, as it does not show clearly, and care must be taken not to enter Wildersmouth—a mistake which might prove fatal. The Lantern Hill, on entering, is to be left on the west or starboard hand, and the

more elevated land, called Hillsborough, on the east or larboard. The land at the back of Ilfracombe is, likewise, high. In the winter, four small vessels are employed to the westward on the look-out for those who may require their aid in making the harbour.

Pilots may be had here to conduct vessels to King's Road, or any other part of the Bristol Channel. In the winter season there are small vessels employed to the westward, on the look-out for those who may require their assistance in making and entering the harbour.

From Ilfracombe to the Foreland or Farland Point, the distance is about four leagues E.S.E.  $\frac{1}{4}$  E. At about  $3\frac{1}{2}$  miles from Ilfracombe Lighthouse, and about a quarter of a mile off the land, a little to the eastward of Combe Martin Cove, lies the Copperas Rock, with about 6 feet on it at low water: this will be cleared on the north side, by keeping the saddle of the Foreland in sight. The same mark clears the rocks off the east point of Combe Martin Cove. Off the west side of the Foreland Point is the Sand Ridge, at a short distance from the shore, and therefore may easily be avoided; it has 6 or 7 feet water on it at low ebbs.

Eastward of Barrow Nose the coast forms Combemartin Bay, within the S.E. angle of which are the fishing-boat creek and straggling village of Combemartin. There is no good ground here, but it is a convenient place for a vessel, heaving to the westward, to heave-to in till the tide turns, and with the wind off shore a vessel may anchor in 8 or 9 fathoms, immediately west of the Hangman Hills, which terminate abruptly to the sea, at nearly two miles S.E. by E. from the entrance of Watermouth.

The coast now assumes a mountainous appearance. The Hangman Hills, a range of high land, nearly parallel with the shore, extend eastward to about three miles from Combemartin Bay. The hill called the High Hangman, at a mile from the Bay, is 1056 feet high above low water. The Great Hangman, at a mile and a half more to the east, is 1160 feet high, within half a mile from the cliffs, of which the shore is here composed, and which are steep to, from a depth of 5 and 6 fathoms. The Little Hangman terminates the Hangman Hills on the west. It is considerably lower than the rest, but the more remarkable from its conical shape on all sides and its prominent position, standing, as it does, on the eastern arm of Combemartin Bay.

Minehead, in a line with the extremity of the Foreland, leads on to the bank, and the Little Hangman in one with Hangman Cliffs, bearing W.  $\frac{1}{2}$  N., leads a quarter of a mile to the northward of it, in 7 fathoms.

Linnmouth Bay, west of the Foreland, affords clean anchorage in 5 fathoms, and quite out of the ebb stream, every where inside the land ridge.

From the Foreland Point to Hurstone Point, the distance is 8 miles S.E. by E.  $\frac{1}{2}$  E. about  $2\frac{1}{2}$  miles to the eastward of the Foreland Point is Cossacombe Bay. Porlock Bay lies to the westward of Hurstone Point; here vessels may stop a tide, in 6, 7, or 8 fathoms, being careful to avoid a shoal which extends one-third of a mile N.N.W. from Porlock houses. There is also a shoal lying about a quarter of a mile from the shore off Hurstone Point.

The Foreland has been so named from its being high and bold, its summit rising to the height of 707 feet; but the shore is shoal around it, to a short distance outward, on the western side. Its extremity bears E.S.E.  $\frac{1}{2}$  E. five miles from High-veer Point, and N.W. by W.  $\frac{1}{4}$  W. nine miles from Minehead, the next bluff to the eastward. The exterior is an irregular ridge, falling abruptly to the sea, and the interior has a gentle hollow or saddle, so that it makes clearly only on an eastern



or western aspect. The soundings deepen to 21 fathoms, rocky bottom, at  $2\frac{1}{2}$  miles off, and then shoalen gradually towards the Welsh coast, nor does such deep water occur more to the eastward.

The Foreland Ledge, a rocky bank, extends two miles east and west, abreast of the Foreland, at the distance of a mile. The depth over its S.E. part is only 19 feet, but westward are  $4\frac{1}{2}$  fathoms. Between it and the Foreland the depth is 7 fathoms, and on the outside are from 10 to 14 fathoms.

In boisterous weather, from the westward, it will be prudent to keep farther out than the depth of 7 fathoms, until Capstone Hill, near Ilfracombe, comes in sight over Rillage Point, bearing W.  $\frac{1}{4}$  N., for thus you will avoid the dangerous overfalls caused by the Ledge. Heavy-laden vessels should either give the Foreland a berth of two miles or pass close round it, sweeping Linmouth Bay, and thereby escaping a swamping sea.

The tide between Morte Point and the Foreland, at a short distance from shore, and, excepting at the extreme points, makes down at half flood and up again at half ebb, but at the points above mentioned it runs to the last.

The streams of tide, at  $2\frac{1}{2}$  miles off the Foreland, run parallel to the coast, but in mid-channel they set fairly up and down, E.S.E. and W.N.W., according to the actual time of high and low water by the shore, at an average velocity of 4 knots on springs and 3 on neaps, always allowing half an hour for slack water. In the vicinity of the Foreland the time of high water, full and change, is 6h. 10m. and the vertical rise 33 feet.

Three miles and a quarter S.E. by E. from Hurstone Point is Greenalay Point, and about a mile S. by E. from it is Minehead Pier, a place said to be capable of admitting large vessels; here a pilot may be obtained for Bristol.

Hurlstone Point is remarkable, and well known as the craggy and western termination of the high land called the North Hills, and extending thence toward Minehead about four miles. The coast, which is called Minehead Land, swells to the northward at the distance of a mile, forming Minehead Bluff, and to the distance of two miles farther is bold-to. Here it is interrupted by the low shelving point of Greenalay, or Greenlea, the only cultivated spot in the interval between Hurlstone Point and Minehead, and here begin straggling spits of rolling stones, which are uncovered at two cables out at low water, with long rocky spits, trending N.W. from Minehead, which make it dangerous, after half ebb, to pass nearer than half a mile toward the high-water mark. So long, however, as the Foreland Point is kept in sight, or, in thick weather, if the vessel be kept in 10 fathoms of water, she will be clear of all danger. From Greenalay Point the distance of Minehead pier, to the S.E. by S., is rather more than a mile.

Minehead.—The small but well-known pier of Minehead is the first place to the eastward of Ilfracombe that offers shelter to coasters with a wind on shore. Twenty-four miles of iron-bound coast which intervene have very few spots which are accessible even to a boat. The pier opens out directly under the eastern extremity of Minehead land, but many small vessels, in attempting to gain it, have been lost in the chopping sea produced hereabout by the weather-tide. On approaching with young flood it will be requisite to keep to the westward of Greenalay till tide-time for pushing in, in order to avoid driving on the rocky shelf extending half a mile from the pier, it not being safe to bring up unless in moderate weather.

The pier consists of a single arm, curving to the east and S.S.E.; its parapet and outer extremity are kept white-washed, and its base stands exactly at half-tide mark, so that there is a certainty of finding 10 feet of water at three-quarters flood,

and till first quarter ebb at the springs, with 17 feet at high water; on neap tides there are but 9 feet at high water. On full and change days, the time of high water is 6 h. 30 m.: equinoctial springs rise 38 feet, ordinary springs 35 feet, and neaps 18 feet. An undertow prevails during strong north-westers, and at times such a powerful sea breaks over the pier as to carry the shingle with it in showers, and to occasion the decks to be abandoned, when blowing hard at the top of a spring tide. During tide-time, if any vessel is observed to be hovering, a lantern is exhibited at the pier-head.

Nearly 6 miles S.E.  $\frac{1}{4}$  S. from Minehead is the small pier of Watchet, used by fishermen only.

Little Stoke Point bears E. by S., 5 miles from Watchet, and from this point a rocky spit, with a broad shallow flat, extends to the N.W. by N., a mile and a half, having over it only 3 to 9 feet of water, and about half a mile of the inner part of the spit, generally covered with loose rolling stones, dries with spring tides.

The Kilve Patch, a shoal over which the least water is  $2\frac{1}{2}$  fathoms, lies within half a mile to the north of the Stoke Spit, and in the passage between are from 4 to 6 fathoms. At a mile E.S.E. from the Kilve Patch is Stoke Patch, a shoal of  $2\frac{1}{2}$  fathoms; next follows the great shoal bank of Bridgewater Bay, which will be best understood by reference to the charts.

At ten leagues S.E. by E.  $\frac{1}{4}$  E. from the Foreland, and  $21\frac{1}{2}$  miles E.S.E. from Hurlstone Point, are the Lighthouses of Burnham, which serve as leading marks into the Parret or Bridgewater River. Of this river the entrance is formed by the Gore Sand on the north, and an extensive flat on the south side. The first may be known by fish-stakes, which are fixed upon it. At a distance the mouth of the river may be known by the relative lowness of its land. The lighthouses stand on this low land, and bear from each other E.S.E.  $\frac{1}{4}$  E., and W.N.W.  $\frac{1}{4}$  W., distant 1,500 feet. Those who are bound up the river are to observe that the lights kept upon that line of bearing will lead in the best water, between the Gore and Stert Sands; and they should be particularly careful, in approaching, to have the lights in one, before the Flatholm light is shut in with the west end of Steepholm; observing that the last mentioned light will be open upon the bearing of N.N.E.  $\frac{1}{4}$  E. Vessels may then proceed upward, with the lights in one, until the tower of Burnham Church bears S.E. by S. when they may steer to the southward, up Burnham Reach, and come to an anchor.

To mariners navigating the Bristol Channel, in the vicinity of these lights, a bearing of the upper light will be found particularly serviceable, to clear the Culver Sand and One Fathom Bank, hereafter described.

The eastern or upper light burns at an elevation of 91 feet 6 inches above the level of the sea, at high water, spring tides, and the light intermits,—its duration being  $3\frac{1}{2}$  minutes, during which space its brilliancy will be visible from N.W. by W.  $\frac{1}{4}$  W. to W. by N., and the period of its entire obscuration, 30 seconds.

The western or low light burns at an elevation of 23 feet above the same level, without intermission, and the brilliancy thereof is visible from N.W. by W.  $\frac{1}{4}$  W. to W. by N.

The tide at the mouth of the Parret rises 36 feet, and sometimes flows in with such impetuosity that it comes two fathoms deep at a time; and when it does so unawares, it frequently occasions great damage to shipping. This sudden rage of the tide, called a Bore, is frequent in the Severn, and all the rivers of the Bristol Channel.

With the Flatholm bearing N.N.E.  $\frac{1}{4}$  E. and open to the west of the Steepholm,

you will be clear to the west of the Gore Sand; and, with the lighthouses bearing as above, you will be in a line with the mouth of the river.

In thick weather, when the Flatholm cannot be seen, it may be useful to know that a tuft of trees, which seem to stand near the water, and in one with a grove on a high inland hill, bearing S.S.W., will also lead clear of the tail of the Gore Sand in about three fathoms. Every precaution should be taken that a forthcoming flood may not drive you on the shoal, nor outside of it, especially during a westerly wind.

Bridgewater, &c.—To a stranger, a pilot for the Parret, or Bridgewater River, is generally indispensable; but in a case of emergency, or if a pilot cannot come out, which is frequently the case, you may advance with the lighthouses E.S.E. as above, but cannot proceed until after two hours flood, when you may steer directly for the lighthouses until the Flatholm be shut in with the Steepholm: now change the course to E. by S. and E., with Burnham Lighthouses a little on the starboard bow until the Flatholm Lighthouse be opened to the eastward of the Steepholm; you may thence advance, by the inner edge of the Gore, about E.S.E. and S.E. and come to an anchor, if possible, at a little above the lighthouses. Here a pilot will be found.

The River Parret, says Captain Denham, winds through an extensive tract of alluvial ground scarcely raised above high water, and makes its exit between the Berrow and the Stert Flats, which extend more than three miles from the high water shore, and which, in some places, dry at low water to the height of 15 feet. To search, therefore, for the mouth of the river at 5 or 6 miles outside of the lighthouses would be a dangerous task, were it not for the fortunate situation of Brent Knoll, a table-topped hill of 883 feet in height, which stands at two miles to the eastward of the lighthouses, and, by a most fortunate coincidence, on their exact line of bearing. Brent church, which stands at the foot of the hill, is also on the same line, and though the steeple is dark in colour, it may often be seen before the lighthouses; bring, therefore, the southern and highest shoulder of the knoll on the proper bearing, E.S.E.  $\frac{1}{4}$  E., and the church and the two lighthouses will gradually rise into view. As may be readily supposed, a high lone hill like Brent Knoll makes at a distance like an island, but so does Brean Down, which is 5 miles to the northward of Brent Knoll; and the only way of distinguishing them, when seen separately, is, that the summit of the knoll is nearly flat, while that of the other, and likewise of Steepholm, are hog-backed.

The Gore Sand extends about  $4\frac{1}{2}$  miles from the shore, and between 2 and 3 off the mouth of the river, to which it is almost a bar; with the Flatholm bearing N.N.E.  $\frac{1}{2}$  E. and well open to the west of the Steepholm, you will pass clear of the west end of it, in 3 fathoms water, and with the lighthouse bearing as above, you will be in a line with the mouth of the river. A black buoy has been placed in 3 fathoms, with Worle windmill, its apparent length on the south part of Brean Down, E.N.E.  $\frac{1}{4}$  E.; Burnham High Light Tower, its apparent length open eastward of the Low Light Tower E.S.E.; and Flatholm, its apparent width open northward of Steepholm, the Light Tower upon the former island bearing N.N.E.  $\frac{1}{4}$  E.

In hazy weather, when the Flatholm cannot be seen, a nearer mark is a tuft of trees apparently near the water, in a line with a grove on a hill inland bearing S.S.W.; this will lead clear of it in the same depth of water.

The Culver Sand is a dangerous flat, extending E. by S. and W. by N. about 5 miles in length, and one broad; it partly dries and lies to the northward of the track to Bridgewater. Its west end bears E.S.E.  $\frac{1}{4}$  E. at the distance of 20 miles

from the Foreland; and when Quantock Hill, which has a tower or beacon upon it, bears S. by W., you will be abreast of that part. When Flatholm is in one with Steepholm, or bearing N. by E.  $\frac{1}{2}$  E., you will be about a mile to the eastward of the east-end. In westerly gales the sea breaks on some parts of it at half ebb; the south side shoals gradually, and between it and the main, there are from 4 to 8 fathoms water. The flood tide sets with great velocity from the Ness or Nash Point, directly over it into Bridgewater Bay, which requires great care to guard against. East Culver buoy is red, in  $6\frac{1}{2}$  fathoms, with Penarth Head on with Lavernock Point N.N.E.  $\frac{1}{4}$  E.; Blackmore Point, just open southward of Steepholm, E.N.E.  $\frac{3}{4}$  E.; Flatholm Light Tower N.E.  $\frac{1}{2}$  E.; and Burnham Church Tower S.E. by S.

West Culver, red and white striped, with beacon, in 4 fathoms, with Swallow Cliff a little open of the south end of Steepholm E.  $\frac{1}{4}$  N.; Willet's Tower well open to the westward of West Cantock's Wood, S.S.W.  $\frac{1}{4}$  W. westerly; East Culver Buoy E.  $\frac{1}{4}$  S.

The Holms are two small islands, distinguished by the names of Flatholm and Steepholm; the former, which is the northernmost, is low; and the southernmost is a high round island. The Flatholm has a lighthouse, which bears from the north end of Lundy Island E.S.E.  $\frac{1}{2}$  E., distant nearly 20 leagues. This lighthouse is now illuminated with Argand lamps and reflectors, and exhibits a bright revolving light on the best principle all round the horizon. Its true situation, according to the trigonometrical survey, is in latitude  $51^{\circ} 22' 33''$  N. and longitude  $3^{\circ} 6' 25''$  W. from Greenwich. On the New Patch, about half a mile E.S.E. of the Flatholm is a white buoy, in 9 feet of water; and on the west side of the Wolves, a mile to the north-westward of the Flatholm is a chequered red and white buoy, in 5 fathoms, at half a cable's length from the rocks.

From the Flatholm the Steepholm bears about S.S.W., distant 2 miles: the depths between are from 6 to 8 fathoms, and the tides are generally very rapid. The Steepholm is bold-to, excepting at the east end. The Flatholm is also bold-to within a cable and a half, excepting at the east end, which should not be approached nearer than one-third of a mile: vessels may anchor and stop a tide under this island, in the depth of  $4\frac{1}{2}$  or 5 fathoms at low water, at the distance of half a mile N.E. by E. from it; but with a fresh breeze the tide ripples and breaks much.

One Fathom Bank.—This bank is of small extent, and lies about  $3\frac{1}{2}$  miles to the westward of Flatholm, and 3 miles to the northward of the Culver Sand; it has, according to its denomination, 6 feet on it at spring ebbs. St. Thomas's Head kept open to the northward of the Steepholm, and bearing about E.  $\frac{1}{2}$  S., will lead between it and the Culver Sand. A white house on the hill on the main within Barry Island, in one with the east end of that island, clears it on the west side. Portishead or Fort Point open to the southward of Flatholm, leads clear to the southward of it, and the same point open to the northward of Flatholm, leads to the northward of it. On the western edge of the One Fathom Bank, 3 miles to the northward of Culver Sand, is a black buoy in 5 fathoms.

The Coast between the entrance to Bridgewater and the extremity of Bream Down, which lies to the north-eastward, is sandy, and is shoal to a considerable distance from the shore. From the extremity of Bream Down, a reef, called the How Rocks, extends about a cable's length off.

From the point of Bream Down N.E. by E.  $\frac{1}{4}$  E., distant 2 miles, lies Weston or Anchor Head; the coast between forms a bay called Uphill Bay, which is shoal, and is used by very small vessels only. From Anchor Head foul ground and rocks

extend about half a mile, among which is the Bearn Rock, or islet above water, which lies directly off the head.

St. Thomas's Head lies about N.E.  $\frac{1}{2}$  E., at the distance of a mile and three-quarters from Anchor Head: between, the land forms a bight called Sand Bay, which is shoal, but may be approached safely by the lead. Here vessels may find good anchorage with easterly winds, in the depth of 5 fathoms, at about mid-way between the two heads, by shutting in the eastern land.

To the northward of St. Thomas's Head, about 2 miles, lies the west end of the English Grounds, which thence extend to the eastward  $6\frac{1}{2}$  miles, and from the shore full three miles: part of these, called the Clevedon Flats, dry at low water; and at the N.W. extremity of the English Grounds there are only 9 feet water, this shallow part lying N.N.E.  $\frac{1}{2}$  E., three miles from St. Thomas's Head, and E.  $\frac{1}{2}$  N., six miles from the Flatholm. The channel towards King Road here becomes narrow, being bounded on the north side by the Welsh Grounds, which are very extensive, rocky, and dangerous, partly drying at low water, and being steep-to. The channel between is not one mile in breadth.

A light vessel is situate on the south side of the channel, between the English and Welsh grounds. It lies in  $6\frac{1}{4}$  fathoms, exhibits a brilliant revolving light, and lies  $10\frac{1}{4}$  miles below, or to the westward of, King Road; and its marks are, the high land of Minehead on with Flatholm Light Tower bearing W. by S., the Usk Light Tower N. by E.  $\frac{1}{2}$  E., and a remarkable peak on the distant land, (known as See-me or See-me-not) S.  $\frac{1}{2}$  E. on with St. Thomas's Head.

The S.W. end of the Welsh Grounds lies  $7\frac{1}{4}$  miles E.N.E.  $\frac{1}{2}$  E. from the Flatholm Lighthouse, and the grounds extend thence up the Severn beyond King Road.

The Monkstone is a sunken rock, lying 2 miles N.E.  $\frac{1}{2}$  E. from the Flatholm, with the isles Barry and Sully in a line, bearing W.N.W.  $\frac{1}{4}$  W., and the bluff head within Penarth Point in a line with that point, bearing about N.N.W.  $\frac{1}{2}$  W. This rock shows a little after half ebb, and has from 8 to 10 fathoms very near to it.

Monkstone lies off a green buoy in 3 fathoms, half a cable's length westward of the rock, with the southern extremity of Barry Island on with the main land inside Sully Island W. by N.; Uphill Church Tower S. by E., its apparent length open eastward of Bream Down; and Flatholm Light Tower S.W.  $\frac{1}{2}$  S.

From Flatholm to the N.W. Elbow of the English Grounds, E. by N.  $5\frac{1}{2}$  miles. From Flatholm to the tail of the S.W. Patch of the Welsh Grounds, E.N.E.  $\frac{1}{2}$  E., 6 miles. N.W. Elbow of the English Grounds to the North Elbow, E.  $\frac{1}{4}$  N. two miles. N.W. Elbow of the English Grounds to the Light-vessel, E.  $\frac{1}{2}$  N., one mile and a third.

Light-vessel to King Road.—North Elbow of the English Grounds to the Pigeon House on the south shore, E.S.E.  $\frac{1}{2}$  E. 5 miles. Pigeon House to Blackmore Point or Blacknose, E.N.E. one mile and three-quarters. Blacknose to Portishead or Porset Point, East, a mile and three-quarters. Portishead to King Road, E.  $2^{\circ}$  S. two miles.

The most particular directions for proceeding from Flatholm to King Road have been given by Captain Beechey, in the book which accompanies the recent surveys, and they are so far illustrated by views of the sailing marks as to be essentially serviceable to the junior pilots; but, from the peculiar nature of the navigation, even these cannot enable a stranger to proceed without some risk and difficulty. The following general remarks, extracted therefrom, may however, be acceptable.

Should a stranger, in case of emergency, be under the necessity of running up

in thick weather, he must proceed very cautiously; every thing will depend on the expertness of his leadsman, and the vessel should not go too fast for quick up and down soundings. He should also minutely calculate the different periods of the tides, and have them by him in a written memorandum. With a vessel drawing 15 feet of water, the best pilot would hesitate in thick weather at low water; a stranger, therefore, should on no account attempt it until the tide has risen at least two hours, because it is absolutely necessary to get hold of the English Grounds and to keep along them, which cannot be done at low water without striking.

From Flatholm the first course should be to the eastward of that recommended for clear weather, say E.  $\frac{1}{2}$  N., in order to pick up the English Grounds, which must be done before five miles are made good for that island, and allowing for a tide carrying the vessel  $3\frac{1}{2}$  or 4 miles an hour on springs. If, when reckoning the ship to be about 5 miles from Flatholm, the soundings continue deep, haul to the southward until a cast of 3 or  $3\frac{1}{2}$  fathoms is obtained, a sure indication of being on the edge of the English Grounds. Then an E. by N. course should be steered, yawing to the northward when the soundings are under 4 fathoms, and to the southward when above 5 fathoms. In this manner he must continue feeling his way up to the light-vessel, which he can scarcely miss, but he must, on no account, continue longer than three or four casts in more than 5 fathoms of water.

On perceiving the light-vessel he should close her, and steer on E.  $\frac{1}{2}$  N. to pick up the North Elbow of the English Grounds in 3 fathoms, allowing for the rise of the tide. At the first deep cast afterward, that is of 7 or 8 fathoms, he should alter the course to E.S.E., but still feeling the edge of the English Grounds occasionally in 4 or 5 fathoms, in order to be certain of being on the south-eastern side of the channel. In this cautious but simple manner he may proceed; for unless the weather should thicken to an actual fog he will be able to perceive the high land about Walton, which is bold; and from the Pigeon House to Portishead he may freely pass within a cable's length of the rocks.

Endeavouring to keep the south shore in view, and steering E.N.E. from the Pigeon House to Blacknose, and east from thence, he must contrive to see Portishead before he runs on to King Road, the course to which is E.  $\frac{1}{4}$  S. and distance two miles. Let him then keep as near the south shore as the soundings will allow; as it is better to run upon the mud on that side than upon the hard sands of the Welsh Grounds, where the tides sweep with great rapidity: but there will be no danger of either, if unremitting attention be paid to the leads, in both chains, observing that, in mid-channel are from 5 to 7 fathoms at low water up to the buoys of King Road, and recollecting that, about the time of his arrival at King Road it will be nearly that of high water, provided the foregoing directions have been followed as to the time of leaving Flatholm; so that, as spring tides rise 7 fathoms, the ship will be in 13 fathoms if she is in the proper channel. So soon as the buoys are seen the vessel can be safely steered to a berth; and if not seen, she should be anchored when the estimated distance, allowing for the tide, has been run.

#### *Directions for running up by Night.*

Should necessity, in a case of emergency, force a vessel to run up the channel by night, if the lights can be fairly seen there will be but little danger in so doing at half or at two hours flood. Let Flatholm light be kept W. by S. till the floating light be seen, and when within two or three miles bring it to bear E.  $\frac{1}{4}$  N. passing close on its northern side. Then steer E.  $\frac{3}{4}$  N. keeping the light-vessel open to the southward of Flatholm, about half a point, till Usk light bears N. by E., or until

the water deepens to 7 or 8 fathoms, and then immediately alter the course to about E.S.E., so as to bring the light-vessel W.  $\frac{1}{4}$  N. or W.  $\frac{1}{2}$  N. before the Usk light bears N. by W. Steer toward the southern shore about E. S. E., and get close in with it, haul round Portishead closely, and steer E.  $\frac{1}{4}$  S., by the lead, two miles, into King Road, whence the Usk light bears N.W.  $\frac{3}{4}$  W.

If, in running these courses, any doubt should arise as to the situation of the vessel, feel the edge of the English Grounds and keep along them. If this should be done with an ebb tide on the eastern side of the English Grounds, haul off eastward immediately on shoaling to 5 fathoms, for the bank there is steep-to, and the tide runs furiously over it. But the Usk light must not be brought to the westward of N. by W. while the lightvessel is to the westward of W.  $\frac{1}{4}$  N. until the southern shore is close on board.

Avon Light.—In order to facilitate the navigation into the Avon, a lighthouse has been erected on the eastern side of the entrance, within Dunball Island, which exhibits a brilliant fixed light, at an elevation of 73 feet above the level of high water, spring tides, and therefore to be seen more than three leagues off. First lighted May 25, 1840.

### *North Side of the Bristol Channel.*

The entrance of the River Usk leading to Newport, lies 11 miles N.E.  $\frac{1}{4}$  E. from Flatholm. Upon the western side of the entrance a lighthouse has been erected, which exhibits a powerful and constant light from a horizontal row of Argand lamps and reflectors, in all directions, from Penarth Point to King Road.

If bound from King Road to the Road of Penarth, and having reached, by the directions already given, the southwest end or tail of the Welsh grounds, stand to the northward and eastward over to the Welsh coast, and thence between this coast and Cardiff grounds into the Road of Penarth or Cardiff. Approach no nearer to the Cardiff grounds, on the east, than with Worle Mill (in Somerset) on with the west point of St. Thomas's Head. The depth this way, between the coast and Cardiff ground, is only 8 or 9 feet at low water. The best way, therefore, is to proceed in from the southward, by standing toward the Flatholm until clear of the Monkstone; then haul over to the northward for Penarth Road. The leading mark up to the road, as before noticed, is the Steephholm a little open to the west of the Flatholm.

Cardiff.—The tide haven of Cardiff lies about 4 miles N.  $\frac{1}{4}$  E. from the Flatholm, and has without it a good roadstead, where vessels may lie securely, without almost any wind, sheltered by the banks which lie to the northward and eastward of it; of these the principal is named the Cardiff Grounds, which is 2 miles in length.

Here a flat of soft mud extends from the northern shore more than a mile out, on which vessels may safely lie aground at half ebb: the nearer they lie to the land the sooner they will be left dry and the shelter will be better; but it is necessary to be cautious lest they get beneaped if close in. Penarth may be easily known by the land being high and a low church upon it.

Cardiff Hook Buoy is chequered black and white, in 2 fathoms, with Cardiff Church Tower N.N.W.  $\frac{1}{4}$  W., its apparent length open eastward of a conspicuous clump of trees; Peterstone Church Tower N.E.  $\frac{3}{4}$  E., apparently midway between the spire of Newport New Church and the tower of the old church; and the Usk Light Tower N.E. by E.  $\frac{1}{4}$  E.

West Cardiff, black with beacon, in 4 $\frac{1}{2}$  fathoms, with the east end of Steephholm S.  $\frac{1}{2}$  W. on with the west end of Flatholm; Ball's Cottage (white), open southward of Lavernock Point, W.  $\frac{1}{4}$  N.; and Cardiff Hook Buoy E.N.E.  $\frac{1}{4}$  E.

From Cardiff Road the east end of Steepholm will be in a line with Flatholm, and at half tide the S.W. end of Cardiff Grounds will be in a line with the two holms, bearing S. by W.  $\frac{1}{2}$  W. At this state of the tide Cardiff Road is only open to the S.S.W.; but at high water, or when the grounds are covered, it will be open from S.S.W. to E. Steepholm, open to the westward of Flatholm, will lead into Cardiff Road to the westward of the grounds.

Vessels bound hence to Newport, by night or in thick weather, should run along shore about east or E. by N., in  $2\frac{1}{2}$  or 2 fathoms, and on deepening the water to 3 or 4 fathoms they will be in Newport Channel, and should haul up N.E. or N.N.E. The lighthouse on the west side of the Usk may be seen all the way from Penarth to King Road; there is also a church upon a hill which bears N.N.E.  $\frac{1}{4}$  E. from the channel's mouth. Should the darkness of the night prevent you from proceeding up the river, you may anchor in safety on either side, just within the entrance, where you will ground at half ebb; but it is necessary to carry a small anchor on shore, in order to make your vessel swing clear of her anchor on the succeeding flood; by the neglect of this precaution vessels frequently break their anchors or get them through their bottoms.

Vessels bound to Newport from the southward should bring the Flatholm Lighthouse to bear S.W. by W., and steer N.E. by E., keeping it on that bearing, and they will pass between the Welsh grounds and the coast of Monmouth, towards the lighthouse at the mouth of the river Usk. In this passage they will have from 7 to 10 feet, at low water, but there are several heaps of ballast in it. The marks to clear the west end of the Welsh grounds are, a windmill near Woodspring over a white beach at St. Thomas's Head, between its eastern and western points; and a church standing on the west end of Brent Knoll, in Somersetshire, in a line with Anchor Head, bearing S. by W.  $\frac{1}{2}$  W. At a proper time of tide small vessels frequently go over the Welsh grounds to Newport; but large vessels mostly pass to the westward of the Welsh grounds between them and the Cardiff grounds as we have described. As the tide sets very rapidly between the Monkstone and Cardiff grounds, the passage between them should be avoided if possible.

By virtue of an Act of Parliament, a port has been constructed at the sole and vast expense of the Marquis of Bute, called Bute Docks, the entrance of which is so well sheltered from the raking S.W. winds by the coast between Penarth Head and Lavernock or Arlope Point, that the roadstead at the mouth of the Taff is as favourable an outlet for the new port as could possibly have been desired. The float is of great capacity for large shipping; so as not only to be adequate to the present trade, but to such an increase as may be expected to arise from the accommodation thus afforded.

The floating harbour already made is entered through sea-gates of 45 feet width, which open into a spacious basin of about an acre and a half, and calculated for vessels of great tonnage. The main entrance lock is situate at the north end of this outer basin; it is 152 feet long by 36 wide, dimensions which were assumed for the locking of ships of 600 tons burthen. Passing this lock, the ship canal is entered: it extends in a continuous line toward the town of Cardiff, 1400 yards in length, and 200 feet wide, comprising a mile of fine wharfage, and varying in depth from 19 to 13 feet.

The Bute Docks are entered by a straight open channel, 1250 yards in length, cut through the mud-lands from the part of the roadstead called the Eastern Hollows, where the two outer buoys are placed, and leading up to the sea-gates. The Eastern Hollows lie with Cardiff Church a sail's breadth open to the westward of



the glass-houses; the eastern end of the Steepholm in one with the western side of the Flatholm, and St. Bride's Church just appearing to the southward of Peterstone Church. The trend of this channel is N.N.E. (by compass) being led thus to be effectually sheltered by Penarth Point; and throughout the whole length, as early as half tide, are from 9 to 12 feet of water, deepening at high water to 32½ feet in springs, and 22½ feet in neaps.

In addition to ten warping buoys, five on each side of the cut, there is a substantial pair of dolphins at 240 feet from the docks, and at nearly the same distance apart; so that when there is water sufficient, a vessel may, with the utmost confidence, boldly run for the dock-gates in any weather, keeping the warping buoys and the dolphins on each side, in a channel 200 feet wide, using only the common precautions requisite when entering pier-harbours in general.

This cut is daily improving, as the sides are made at a slope which will induce slips, and these slips are merely the ground taking a flatter and more natural inclination by the top sliding or falling inward; then, by carefully scouring off these extra deposits, the cut will be gradually widened till it assumes the form and aspect of a work of nature rather than of art. There is an embankment running down the eastern side, upwards of 400 feet, rising to 4 or 5 feet above the highest, or equinoctial, spring tides; and this will probably receive many additions. The width of the cut near the entrance has already much increased since it was begun, and will continue to widen until it becomes like the old bed of the river; a natural consequence of nearly the whole stream of the Taff being turned into it, by means of a feeder, reservoir, and sluices.

All winds from E.S.E. round southerly to N.W. (by compass) comprising no fewer than 18 points, will prove fair for entering the Bute Docks; and all those which blow from S.E. round northerly to W.N.W. are fair for leaving them. Unfavourable weather and calms will be counteracted by steam-tugs; though it should be noted that the winds which create any difficulty in getting out, are exactly those which no sailor ought to be outward bound with in the Bristol Channel.

The dangers of the approaches to the Bute Docks are of no moment whatever, when compared with other ports of the Severn: as they are all, with the exception of the Wolves and the One Fathom Bank, either to the eastward or westward of the fair-way channel. Among the former may be enumerated the Monkstone and the Cardiff Grounds; and of the latter the Cefn-y-Wrâch and the Patch under Penarth Head, and in the mouth of the Ely River. The Ranie Spit, protruding in a S.E. direction from Arlope Point has been heretofore noticed; but this, too, is to the westward of the fair-way, and of great service in checking the rapidity of the tide through Penarth Roads.

The Orchards.—Considerably to the eastward of Penarth Point, and consequently quite out of the track of vessels bound into Bute Harbour from the west, are some rocky shoals called the Orchards, which lie exactly upon the low water line. Newport Church within its own length of Peterstone Church leads to the southward of them; and St. Bride's Church in one with that of Peterstone leads between them and the land, in not less than 8 or 9 feet of water at half flood. The mud lands, from the Orchards to the Cardiff Moors, form a plain slightly inclining to seaward.

Directions for entering the Bute Docks.—If a master intends to avail himself of the excellent accommodations afforded to vessels of every class in the Bute Docks, he should endeavour to get into Penarth Roads about the period of half flood, so as to enter the docks upon a rising tide, as should be done at all pier harbours.

Rounding Arlope Point for this purpose, upon the given leading mark, Cardiff glass-houses just open to the east of Penarth Point, at the distance of between half and three-quarters of a mile, but not more; by which precaution the vessel will be kept in the northern set of the tide, instead of that which inclines toward the Monkstone.

At the period of half flood a blue flag is hoisted at the dock gates: there are then 10 feet of water, at the least, on the dock-sill, and men are on the look-out to give what assistance the seamen may require. When there are 15 feet of water on the dock-sill a white flag is hoisted. Ten feet of water will be found at the sea-gates at the early period of half flood; 16 feet at four hours flood, neap tides, which is sufficient for a ship of 400 tons; and 19½ feet at high water neaps. At four hours flood, in ordinary spring tides, there will be 20 feet of water on the dock-sill, and there are 16 feet during no less than six hours and a half of each tide. When inside the float, and fasts are carried to the mooring-posts, a ship is in perfect security.

High water on the full and change of the moon at 6h. 37m.; springs rise high and rapidly. At the Eastern Hollows, springs rise 32 feet 6 inches, neaps 22 feet 7 inches. Bute dock-sill springs 29 feet 5 inches, neaps 19 feet 6 inches. In Penarth Roads equinoctial tides 46 feet 5 inches. Springs 39 feet 7 inches, neaps 20 feet 1 inch.

Penarth to the Mumbles Point.—Orlop or Lavernock Point lies about 2½ miles S.S.W. westerly from Penarth Point. There is shelf extending above a quarter of a mile from Orlop Point, which will be to the northward of when Sully Isle is shut in with the point. Between this shelf and Penarth Point vessels may anchor in 2½ or 2 fathoms water.

Orlop Point lies 2½ miles N. by W. ¾ W. from the Flatholm. We have before said that the north and west sides of this island are bold, nearly close to; but at about one mile and a quarter N.W. by N. from the light, there are a cluster of dangerous rocks, called the Wolves, on which the sea generally breaks at half tide. A red and white chequered buoy is placed in 5 fathoms, half a cable's length westward of the rocks, with Hayes' windmill on with the west end of Sully Island N.W. northerly; Penarth Head N. by E. ¼ E.; and Flatholm Light Tower S.E. There is a passage between them and the Flatholm, but it is dangerous to attempt it without a commanding breeze. With Cardiff Tower open of Penarth Point you will be to the eastward of them. Barry Island, just open of Sully Island, is the leading mark between the Wolves and Orlop Point. Within half a mile to the southeastward of Lavernock Point is a white buoy in 4 fathoms.

From Orlop Point westward about a mile and a quarter is Sully Isle, with a small shoal close to the east end. From Sully to Barry Isle the bearing and distance are W.N.W. ¾ W. 2½ miles. The coast between Orlop Point and Barry Isle is, in general, bold to a moderate distance. Between the eastern side of Barry and the main off a spot called Redbrink there is anchorage for small vessels, some go higher up on the mud. About a mile and a quarter to the westward of Barry is Ross Point, which has a church on it, nearly midway between lies the Old Chapel Rock, which may be avoided by keeping Sully Isle open of Barry Isle.

About 4½ miles N.W. by W. ¾ W. from Barry Island lies the entrance of Aberthaw, where very small vessels may run in and lie aground on mud; the shore between is tolerably bold, with the exception of the Old Chapel Rock. The western side of the entrance is formed by Breaksea Point, which is long and low, and shoals off to a considerable distance; therefore, in passing, give it a berth of two thirds of a mile. Sully Isle, well open of Barry, leads clear to the southward of it. On the

outside of the rocks near Breaksea Point, in 5 fathoms, is a beacon buoy, striped horizontally black and white.

Two miles N.W. by W. from Breaksea Point, is Coldue Point; and thence four miles N.W.  $\frac{1}{2}$  W. is the Ness or Nash Point, which forms a bluff. St. Donnat's Castle and Village stands to the eastward of it on elevated land, and form distinguishing marks.

**Nash Lights.**—The Light Towers recently erected upon the Nash Point, in the county of Glamorgan, are situated from each other S.  $58^{\circ}$  E. and N.  $58^{\circ}$  W., distant 1000 feet; and that the lights exhibited therein are fixed or stationary; the eastern or upper light burning 167 feet, and the western or lower light 123 feet above the level of the sea at high water; the brilliancy of which, respectively, will be visible, the high light from S.E. by S. to N.W.  $\frac{1}{2}$  W., and the low light from S. by E.  $\frac{1}{2}$  E., N. by W.  $\frac{1}{2}$  W., but in particular states of the atmosphere, and when not distant from them, they may be seen faintly beyond those bearings. Masters of vessels and others sailing up the Bristol Channel in the fair-way, will make these lights as two separate and distinct lights, and to prevent the possibility, under peculiar circumstances, of mistaking them for those upon St. Ann's Point, it may be well to observe, that in making the lights upon the Nash Point from the south-westward, the high light will be seen to the right, or southward, of the low light; whereas, in making the St. Ann's Lights from the same quarter, the high light will be observable to the left, or northward of the low light. These lights in a line lead to the southward of the sands lying to the westward of the Nash Point, but from the proximity of the Nash Sand to that point, they must, of a consequence, carry near the south-eastern part of that sand, and at the distance of half a mile from the point, not more than a cable's length from it. Masters of vessels are therefore cautioned to keep the high light open to the southward of the low light, when approaching the Nash Point; and in proceeding to the eastward, the high light upon a bearing of N.W.  $\frac{1}{2}$  N. will lead clear of the foul ground off Breaksea Point, and between the One Fathom Bank and Culver Sand, until the Flatholm Light is brought upon a bearing, to enable them to steer to the eastward, as heretofore.

At about two cables' length N.W. by W. from the Ness Point is the east end of the Ness Sand, which thence extends more than 5 miles N.W. by W. A very heavy sea breaks on this bank, and from its east end nearly 4 miles of it dries at low water. Barry Island, kept open of Breaksea Point, leads clear to the southward of it; and the Worm's Head, well open of Port Inon Point, bearing N.W.  $\frac{1}{2}$  N., clears it on the S.W. On and near the Nash Sand are three buoys. That on the west end is a beacon buoy, chequered black and white, in 6 fathoms; the next is on the west side of the Nash Swashway, at  $2\frac{1}{4}$  miles eastward from the former: it is black, in  $2\frac{1}{2}$  fathoms; the third, chequered red and white, lies in  $4\frac{1}{2}$  fathoms; on the eastern end of the sand, within half a mile from Nash Point. The passage between the Ness Point and east end of Ness Sand, has in it from 3 to  $5\frac{1}{2}$  fathoms at low water, but it is seldom used except in fine weather by small vessels bound to Neath, &c. But in their passage up, they must be careful to avoid the Tuskar Rocks, lying S. by W.  $\frac{1}{2}$  W. Two miles from Newton a buoy has lately been placed, painted green, in  $4\frac{1}{2}$  fathoms, a cable's length S.W. of the rock, with Newton Down windmill N.N.E.  $\frac{1}{2}$  E. on with a cluster of trees eastward of Newton Nottage church tower; a windmill upon the sea shore, on with Dunraven Point, S.E. by E.; the Nash Low Light tower S.S.E.  $\frac{1}{2}$  E., and go within the Skerweather Shoals, in 4 or 3 fathoms water.

**The Skerweathers.**—About 3 miles north from the west end of the Ness Sands,

is the S.E. end of the Skerweathers: they are irregular sands, extensive and dangerous, running about W.N.W. a distance of 6 miles, and drying in patches at low water. Their western end lies with the Mumbles Lighthouse, bearing N. by E., and Oxwith Point N.N.W.  $\frac{1}{4}$  W., distant 10 miles. Between these and the Ness Sands there are from 6 to 10 fathoms water; between their eastern end and the shore from 4 to 2 fathoms, and between their N.W. part and the Mumbles Lighthouse from 7 to 13 fathoms. The west end of these sands should be approached with great caution, particularly with westerly winds and a flood tide, as they tail off shallow to a great distance. Two buoys have lately been laid on East Skerweather, red and white striped, in 6 fathoms; with a conspicuous shaft on the summit of the highest hill, open eastward of Constantinople Cottages, the apparent length of them, N.N.E.  $\frac{1}{4}$  E.; Margam Trees on with the west end of a long stone wall terminating near the beach, E.  $\frac{1}{2}$  N.; Nash Low Light tower S.E.  $\frac{1}{4}$  S.; Mumbles Light Tower N.N.W.  $\frac{1}{4}$  W.

West Skerweather, red, with a beacon, in  $4\frac{1}{2}$  fathoms, with Constantinople Cottages on with the mouth of Aberafon Harbour, E.N.E. northerly; Margam Trees open southward of Skar House three times their apparent width, E. by S.; Nash High Light Tower S.E.; and Mumbles Light Tower N.  $\frac{1}{4}$  E.

The Sker Point is known by having a large farm-house upon it: it is moderately bold to the southward, but a shelf called the Muscle Bank extends nearly a mile to the N.W.

Swansea Bay.—Between Sker Point and the Mumbles Point, a distance of  $10\frac{1}{2}$  miles N.W. by N., is Swansea Bay, in which are the harbours of Aberafon, Neath, and Swansea. The Mumbles Point (so called) is the outermost of two islets, and lies nearly a quarter of a mile to the south-eastward of the nearest point of land: they are both surrounded with water at about half-flood, and at high water vessels of considerable burden may pass between them. This is distinguished by a lighthouse having Argand lamps and reflectors, exhibiting a brilliant fixed light. To the eastward of it, in Swansea Bay, vessels may ride in safety in 5, 4, or 3 fathoms, as convenient, sheltered from westerly, northerly, and easterly winds; but it must be observed that the water is shoal a long way off, and you must, therefore, be guided by your lead and the state of the tide.

Aberafon.—The bar of this tide-haven is about 6 miles to the northward of the Sker Point, and  $6\frac{1}{2}$  miles S.E. by E.  $\frac{1}{2}$  E. from the Mumbles Lighthouse. It is a shifting bar, and pointed out by two buoys: but strangers must take a pilot. The bank shoals nearly a mile off, and there is generally much sea on it.

Neath Harbour.—The bar of this tide-haven lies about 4 miles N.W. by N. from that of Aberafon—and about the same distance from the Mumbles Lighthouse: this, like Aberafon, is fit for small vessels only; and although the passage in is properly buoyed, and beacons are placed on the northern sand to point out the channel, which is very narrow and shallow, it should not be attempted without a pilot.

Swansea Harbour is also a tide-haven: it has been greatly improved of late years, and has now a pier and a tide-light, which bears from the Mumbles light N.E.  $\frac{1}{4}$  E. distant 3 miles. The bar is within the pier-heads, and as soon as there are 8 feet water on it the tide-light is exhibited on the pier-head, and continues until the water has fallen again to that depth; by day, a flag is hoisted for the same purpose. Within the bar the water deepens. Pilot boats are always at sea in readiness to assist vessels.

About  $2\frac{1}{4}$  miles E. by N. from the Mumbles Lighthouse, is a shoal of about a quarter of a mile in extent, called the Green Ground.

There is good anchorage in Mumbles Road, in 14 or 15 feet at low spring ebbs, with the lighthouse bearing S.S.W., at about two cables' length from the opening or sound between the islet on which the lighthouse stands; and that next to the N.W. of it. Also farther to the N.W., in 12 or 13 feet, taking care to keep the Mumbles Head in sight clear of the eastern extremity of the land. Small vessels and coasters which are wind-bound, or waiting for the tide to go over the bar, generally lie aground on fine soft mud off Oystermouth.

The *Mixon* is a dangerous bank of rocks and sand lying to the southward of the Mumbles Lighthouse: it has 4 feet on it, and 10 fathoms close to its south side. With westerly gales a heavy sea breaks on it from half ebb to half flood; the lighthouse bearing N.  $\frac{1}{2}$  W. will lead clear of its east end. There is a good passage between it and the Mumbles islets. Port Inon Point, just appearing open of Oxwith Point, leads well to the southward of it. Cashwell Bay is the first small cove to the westward of the Mumbles Head. The houses in this bay, on with the western part of it, clears the west end of the *Mixon*. There is a white buoy in 10 fathoms, with Port Einion Point, on with Oxwith Point, W.N.W. westerly; Kilvey Old Mill Tower, on with Swansea East Pier Head, N.E.  $\frac{1}{4}$  E.; Mumbles Light Tower N. by E.  $\frac{1}{2}$  E.

Mumbles to Caermarthen Bay.—W. by N. distant  $6\frac{1}{2}$  miles from Mumbles Head and 7 from the lighthouse is Oxwith Point, around which the tide runs with great strength. On the east side of this point is Oxwith Bay, on the west side of which vessels may anchor as near to the shore as convenient, well sheltered from northerly and westerly winds. Port Inon Point is  $2\frac{1}{4}$  miles N.W. by W.  $\frac{1}{4}$  W. from Oxwith Point, and between the two points is Port Inon Bay, in which the ground is foul.

The Worm's Head.—N.W.  $4\frac{1}{2}$  miles from Port Inon Point lies the Worm's Head, which is the west end of a narrow peninsula or island lying off Rosilly Point, to which it is joined by a dangerous reef which dries about half ebb, but at high water, on spring tides, has sufficient water on it for vessels of considerable burden to pass over. The S.E. end has a gradual ascent, and forms a short space of table land of moderate elevation, whence it again falls low, and then increases in height, serrated to near the N.W. extremity, called the Worm's Head, which rises higher than any other part, in form of a hay-cock, and terminates abruptly over the sea, so that it cannot be mistaken for any other land in its vicinity. Rosilly Point is also a steep cliff, and of about the same elevation as the Worm.

Helwick Sand.—This is a dangerous bank, being steep-to, on which the sea breaks with great violence in westerly gales, there being only about 5 or 6 feet water at low ebbs, on the greatest part of it, deepening to 2 and  $2\frac{1}{2}$  fathoms near each end. Its east end lies about half a mile to the westward of Port Inon Point, whence it extends westerly and W.N.W. about 6 miles. Besides the passage between its east end and the point, it has a swashway through it, with 4 or 5 fathoms water. The Mumbles Head, kept in sight without Oxwith Point, bearing about E. by S., clears its south side; and Oxwith Point, shut in behind Port Inon Point, clears it on the north side. The west end may be crossed in  $3\frac{1}{2}$  fathoms, with the Worm's Head bearing N.E. by E.  $\frac{1}{4}$  E., distant 3 miles, and Port Inon Point E.S.E.  $\frac{1}{2}$  E. At the above depth of  $3\frac{1}{2}$  fathoms Pembrey Church and House are open to the westward of Burry Holm, bearing N.E.  $\frac{1}{4}$  E., and two houses in Rosilly Bay will be seen over the sound between the Worm and Rosilly Point.

On the western extremity of this sand is a black beacon buoy, in  $5\frac{1}{2}$  fathoms; in the swashway, between the two parts of the sand, is a striped black and white buoy,

in  $4\frac{1}{2}$  fathoms; and, on the east end of the sand is a black one, in  $2\frac{1}{2}$  fathoms. The latter at the distance of three quarters of a mile westward of Porth Einion or Portynon Point.

East Helwick, black, in  $2\frac{1}{2}$  fathoms, with Rossily Point open westward of Tears Point, the supposed breadth of a ship, N.N.W.  $\frac{1}{4}$  W.; a white building upon the high land, apparently midway between two white cottages below that building, N.N.E.  $\frac{1}{2}$  E.

Helwick Swashway, black and white striped, in  $4\frac{1}{2}$  fathoms, with Burry Holms appearing in the centre of Worm's Sound, bearing N.N.E.  $\frac{1}{4}$  E.; and Oxwith Point on with Porth Einion Point E.S.E. Easterly.

West Helwick, black, with beacon, in  $5\frac{1}{2}$  fathoms, with Rossily Parsonage House on with the extreme east end of Worms Island, E. by N. Northerly; Cald Light Tower N.W.  $\frac{1}{2}$  N.; and Porth Einion Point, E.S.E.

Caermarthen Bay.—From the Worm's Head to the S.E. point of Cald Island, the bearing and distance are N.W.  $\frac{1}{4}$  W., 13 miles.

Rosilly Bay.—Two miles and two-thirds, N.E.  $\frac{1}{4}$  N. from the Worm's Head lies the west extremity of Burry Holm: between is Rosilly Bay, in which the water is very shallow from the Holm to a full mile to the southward of it. Farther southward the water shoals gradually, so that the shore may be approached by the lead. The greatest depth is found in the south part of the bay near the Worm; and the best anchorage there is about one-third of a mile E.N.E. or N.E. by E. from the Worm's Head, with Rosilly Church bearing about S.E. by E. With these bearings there are from 5 to 6 fathoms at low water spring tides, and vessels may be tolerably sheltered from E. to W.S.W., or S.W. by S., but exposed to all other winds; and those from the westward blowing hard, send in a very heavy ground sea. Therefore, this bay is but little frequented, excepting for the purpose of stopping during an ebb, and waiting until the flood tide is sufficiently risen to go over the Bars of Burry, Kidwelly, or Caermarthen, when the wind blows from any of the above-mentioned sheltered points; but with winds farther westward, and in the winter season, Cald and Tenby Roads are more eligible places, are those generally resorted to by vessels trading over these bars, and where pilots may be obtained for either of them.

Burry River.—The entrance of it is to the northward of the Burry Holm, and has a bar extending across it, consisting of various sand banks, some of which fall dry  $1\frac{1}{2}$  or 2 hours before low water at spring tides; these banks have channels between them, but the principle one is to the southward, near the Burry Holm and Tulk Cliffs. It is necessary here to notice, that as these banks sometimes change their position, it is not considered proper for a stranger to attempt an entrance, until three-fourths of the flood are run; when, if the sea be tolerably smooth, he may sail over all of them. The Channels are regularly buoyed, and there is a considerable trade carried on at Pembrey, at which place a pier has been run out, and an excellent harbour formed for the accommodation of shipping. Stone, coal, and culm collieries have been opened, and iron works erected, so that Pembrey is now a place greatly resorted to for these articles. On the pier-head stands a lighthouse, in which a light is exhibited: this light is blue to the westward, and red towards Llanelly, and is shewn when 11 feet over the highest sand at the entrance of the bay. A red flag, with a white ball, denotes the same by day. A black ball is also hoisted at the yard-arm, under the flag, when there is water sufficient for a vessel to enter the river by sailing over the banks. The lighthouse on the pier-head is  $4\frac{1}{2}$  miles N.E.  $\frac{1}{4}$  E. from the extremity of Burry Holm.

The first buoy in the South Channel is a black nun-buoy, lying in 3 fathoms at ordinary spring ebbs, nine-tenths of a mile E.N.E.  $\frac{1}{4}$  E. from the west extremity of Burry Holm, and 400 fathoms from the nearest part of the Tulk Cliffs on the south shore. The next buoy is the Linch Buoy, which is a black can buoy, No. 2, lying near the N.N.W. side of the Linch Pool, at the distance of  $1\frac{1}{2}$  mile N.E. by E.  $\frac{1}{4}$  E. from the first buoy, nearly  $1\frac{1}{4}$  W.S.W.  $\frac{1}{4}$  W. from Whiteford barrel-post, and 2 miles S.W.  $\frac{1}{4}$  S. from Pembrey Pierhead. Whiteford barrel-post stands near the north extremity of Whiteford Sker, at the distance of 625 fathoms north from the north extremity of Whiteford Point, and nearly S. by W.  $\frac{1}{4}$  W., 1,280 fathoms from Pembrey Pierhead. The next in order is the first buoy of the North Channel,—a black can buoy, lying on the south side of the North Pool, at the distance of eight-tenths of a mile S.E.  $\frac{1}{4}$  S. from Pembrey Pierhead, and N.E.  $\frac{3}{4}$  E. from Whiteford barrel-post. From this to the second (also a black can buoy) the bearing and distance are nearly S. by E. one-third of a mile.

Those bound into Burry River should first make the Worm's Head, which may be approached, if necessary, to a cable's length or less; and then, in proceeding for the bar, if near low water, should pass nearly a mile to the westward of the holm: this may be done by bringing the Worm's Head to bear S. by W., but not more westerly. When the east end of the Tulk Cliffs bears S.E. by E.  $\frac{1}{4}$  E. some farm-houses will appear just over their extremity; then steer E.S.E. for Preston or Hill's Tor, and it will take you over the bar in 9 feet, which is the deepest water, and up to the first buoy, or you may pass within 3 cables' length to the northward of the cliffs. The first buoy may be passed on either side, but more conveniently on the south, on account of some shoal water lying about a cable's length E.N.E. from it. Having passed on the south side of it, the course to the Linch Buoy will be N.E. by E.  $\frac{1}{4}$  E., and the distance nearly  $1\frac{1}{2}$  mile. To the northeastward of this buoy vessels generally bring up in Linch Pool, in 3 or  $3\frac{1}{2}$  fathoms at low water, on good holding ground; and here they must wait the flowing of the tide for water to pass the barrel-post, or through either of the other channels between the banks.

Vessels frequently anchor near the first buoy, either to the eastward or westward of it for the same purpose.

When the tide has risen sufficiently, those in the Linch-pool should weigh, and steer about N. by E.  $\frac{1}{4}$  E., giving the Barrel-post a berth of 70 or 80 fathoms: then, if bound to Pembrey Harbour, so soon as Pembrey House comes on with the lighthouse on the pier-head, bearing N. by E.  $\frac{1}{4}$  E., take it as a mark to run across by; but, if bound to Llanelly, continue steering as before, until a large white chapel or meeting-house, situated apparently a little to the northward of Llanelly Church, comes on with the second buoy of the North Channel, bearing E.  $\frac{1}{4}$  S.; then proceed in that direction through the North Swatchway, and pass to the southward of the buoy; now steer S.E.  $\frac{1}{4}$  E. three-quarters of a mile for the third buoy, and pass to the southward of it also. The course will then be E., E. by S., E.S.E., &c., along by the brush-poles on the edge of the Cefn Patrick Sand, up to the Barrel-post of Llanelly, which you pass on the larboard hand, and haul short round the buoy to the eastward of it, into Llanelly Harbour.

Pwll Quay is a stone jetty, having a small pile of engine-houses on its inner end, that are erected on the shaft of a colliery which once shipped its produce here; but is now almost inaccessible, even for boats, owing to the increased deposit of sand on the Cefn Patrick Sand, which outlays the quay to the low water course of the river 2 miles. The high water shore trends from Pwll Quay for Llanelly Church; and is bounded by a low railroad that conveys the produce of Pwll Quay

colliery to Llanelly Pier: it is edged with shingle and an outlay of rotten sward, for  $1\frac{1}{2}$  mile from Pwll Quay; half a mile within is flat, but some well wooded heights rise immediately over a light-coloured mansion called Strady; these shores stop at a bight half a mile short of Llanelly Church, where a bridge and pile of engine houses are situated: the same description of low shores then trend S. half a mile to the docks. Llanelly Church is a square-towered, stone-coloured building, standing on a flat, backed by high land half a mile within, in the centre of a straggling town, surrounded by stacks of engine-house chimneys and smoke: it bears from Pembrey Church S.E. by E.  $\frac{1}{4}$  E.,  $4\frac{1}{2}$  miles: half a mile S.W. by W. of it are the lower docks, and three-quarters of a mile S.S.W.  $\frac{1}{4}$  W. of it are the upper docks of the port of Llanelly, where vast quantities of coal are shipped.

There is 6 feet water on Burry Bar at low spring ebbs; ordinary spring tides rise about 30 feet perpendicular, and ordinary neap tides about 12 or 14 feet. It is high water on full and change days of the moon, about 6 o'clock. Pilots are always ready, except in very bad weather, without the bar, in Rosilly Bay, &c.

The N.E. part of Caermarthen Bay has an extensive flat, running off from the shore, through which is the channel to Caermarthen. It is very narrow, and has about 14 feet water over the bar at half flood. The entrance bears about east from Caldy Island, whence its direction lies about N.  $\frac{1}{4}$  E.: it is regularly buoyed, and has 2, 3, and 4 fathoms in it, but should never be attempted without a pilot.

Caldy Island is about a mile and a quarter long, and three-quarters of a mile broad; is clifty and bold-to on the east, south, and west sides. It is distinguished by a house with two chimneys near its S.E. point, and also by its relative position with Giltar Point. A lighthouse is erected on Caldy Island, having a fixed light, from Argand lamps and parabolic reflectors; in passing up or down the Bristol Channel, observe that when the light bears N.N.E. to N.W. the colour will be red, to prevent its being mistaken for any other light. From the north side of the island there are two ridges of rocks, extending N.N. eastward, to the distance of a quarter of a mile, with only 8 or 9 feet water on them; and off the N.W. end of the island is an islet called St. Margaret's Isle, which forms with Giltar Point to the northward of it, the channel or passage called Caldy Sound.

About one mile and a half S.S. eastward from the S.E. point of Caldy, there is an extensive patch of rough rocky ground, called the Drift Rock, with 4 fathoms on it at spring ebbs, and 12, 10, and 9 fathoms close to its west side: this causes a rough breaking sea on it with westerly gales and strong tides; otherwise it is not dangerous. It may be easily avoided, either by passing within a mile of that part of Caldy, or at two miles from it. At nearly a mile south-eastward from Small Ord Point, in Caldy, there is another patch of a similar description with 4 fathoms on it, called the Spaniel: on this the sea also breaks with strong tides and tempestuous weather. There are 6 fathoms between it and the point; and it may be avoided by passing at about half a mile from Small Ord Point, or at a mile and a half from it.

Caldy Roads.—The Outer Road of Caldy lies off the N.E. point of the island, where ships may anchor in 6 or 7 fathoms water, with the spire which stands near the middle of the island, bearing S.W. by W., or more westerly, and the east point of the island S.W. by S., about three-quarters of a mile distant: the spire will then appear over the high cliffs. From the N.E. point of Caldy, which is the high cliff, a rocky ledge runs north-eastward about 300 fathoms, with from 9 to 12 feet water over it; to the westward of this ledge is the Inner Road, where vessels may ride, securely sheltered from all but easterly winds, in  $3\frac{1}{2}$  fathoms at low spring ebbs, on



good holding ground. Here the anchoring marks are, the house which is near the S.E. part of the island, on which the body of an old windmill, standing near a cliffy point next to the westward of high cliff, bearing S.  $\frac{1}{4}$  W.; or the spire on with the old windmill, bearing S. by W.  $\frac{1}{4}$  W., and the N.W. part of St. Margaret's Isle a sail's breadth open of Old Castle Point, bearing W.N.W.  $\frac{1}{4}$  W.

St. Margaret's Isle is joined to the N.W. point of Caldy by a ledge of rocks, mostly above water; and as before said, forms the south side, and Giltar Point the north side of Caldy Sound: it is more than half a mile in breadth, and has 5, 6, and 7 fathoms water in it. At about half a mile to the westward of St. Margaret's Isle is a blind rock, with  $3\frac{1}{2}$  fathoms on it, and 7 fathoms close to it: its situation is distinguishable by the sea breaking on it in blowing weather. The long mark for it is High Cliff in Caldy, in a line with the N.W. part of St. Margaret's Island, bearing S.E. by E.  $\frac{1}{4}$  E.; it may be easily avoided by crossing that mark-line either nearer to, or farther off from the island.

From the cliffy point near the N.W. end of Caldy, called Eel Point, a ledge of rocks extends N.N. eastward to about half way across the east entrance of Caldy Sound, and has about 9 or 10 feet water over it: the mark for its north extremity is St. Gowen's Point touching the west part of St. Margaret's Isle; therefore St. Gowen's Point open will clear it. A nearer mark, and that generally used, is a remarkable spot on the sand-hills in Lead-step Bay, just opening and shutting with Broad Giltar Point, bearing N.W. by W.  $\frac{1}{4}$  W. These marks and bearings must be attended to at low water; but at half flood ships may go over all the dangers.

The Whiteback Sand is a shoal with no more than 5 feet water on some parts of it: it extends from near Giltar Point, eastward, to abreast of High Cliff, in Caldy, whence it bends round to N.E. and more northerly towards Tenby.

The Wool-house, or Wollox Rocks, are about a cable's length N.N.E. and S.S.W., and from 15 to 20 fathoms in breadth; they have 2 fathoms very near them all round, and are covered at about one-third of flood. They lie about  $1\frac{1}{2}$  mile N.E.  $\frac{1}{4}$  N. from the east end of Caldy, S.S.E.  $\frac{1}{4}$  E. from Tenby Church Spire, and E.  $\frac{1}{4}$  S. from Giltar Point; this, when covered by the tide, is the only danger that a vessel can strike on. A windmill, in one with the ropemaker's house, near the edge of the cliff to the southwestward of Tenby, bearing N.W. a little northerly, is a mark for the south end of them. Between these rocks and the Whiteback Sand there is a depth of 4 and 5 fathoms.

Wool-houses.—There is a red buoy in  $3\frac{1}{2}$  fathoms, half a cable's length S.E. of the centre of the rocks, with Caldy Light Tower, its apparent length open southward of the beacon upon that island, S.W.  $\frac{1}{4}$  W.; Lidstep Point on with Giltar Point W. by N.; and Tenby Church Spire N.W. by N.

Between Tenby and Monkstone Head, at about two-thirds of a mile from Tenby Pier, is a ravine; and at a short distance from the sea shore, within the cliffs, is a white house, called Waterwinch. This house, kept in sight, open of the S.W. cliff, leads without the Wool-house Rocks.

Yowan's Rock.—At about a mile to the east and E.S.E. of the Wool-house Rocks lies an extensive patch of foul ground, with 3 fathoms water over it, called Yowan's Rock. In heavy gales of wind from the S.W. quarter, and near low water, the sea breaks violently over it, but otherwise it is not dangerous.

Vessels bound to Tenby, from the eastward of Caldy Island, may pass on either side of the Wool-house Rocks, thus:—To go to the westward of them, bring and keep the east point of Caldy S.S.W.  $\frac{1}{4}$  W.; and to go to the eastward of them keep the same point of Caldy to the westward of S.W.  $\frac{1}{4}$  W., until you open the white

sand and shells, or the beach between the Castle and St. Catherine's Isle; you should then haul in for the Road and anchor in 3 or 4 fathoms, with Eel Point in Caldy, touching the east side of St. Catherine's Isle, and Tenby Church Spire on with the Bathing-house, or a little open to the northward of it. There are 6, 7, and 8 fathoms water on clean ground both to the eastward and northward of the Wool-house Rocks, to a short distance, but farther off there is a less depth.

The Tides.—The stream of tide makes westward through Caldy Sound, nearly two hours before the flood-stream has done running without the island: and it makes eastward through the Sound, and also between the Helwick Sand and Worm's Head, nearly 2 hours before the Channel-ebb has done running.

St. Gowen's Head is the southernmost point of Wales, and lies 3 leagues W.N.W.  $\frac{1}{2}$  W. from Caldy Island; the coast between is generally bold close to, and the cliffs are mostly perpendicular. Old Castle Head is about  $2\frac{1}{2}$  miles to the westward of St. Margaret's Isle, and a little to the eastward of it small vessels anchor, to load with limestones. At  $1\frac{1}{2}$  mile N.W. from St. Gowen's Head is Saddle Head, and about 4 miles farther, in the same direction, is Lenny Head; the coast between is all perpendicular cliffs. To the southward of Lenny Head are the Crow Rocks, three in number. The Middle Crow lies nearly a little S.  $\frac{1}{4}$  W. from that head land, and is covered at about 4 hours flood. The East Crow Toe is visible at low spring tides, and is distant from the Middle Crow three-quarters of a mile S.E.; and the West Crow Toe, also uncovered at low spring tides, lies N.N.W.  $\frac{1}{2}$  W. from the Middle Crow, distant one-third of a mile, and S.S.  $\frac{1}{4}$  W. from Lenny Head: these lie directly in the trade-way, and are very dangerous. The east end of Skomar Island kept a sail's breadth open of St. Ann's Point, on the west side of the entrance to Milford Haven, leads clear to the westward of the whole: the two Lighthouses on St. Ann's Point, in a line bearing N. by W.  $\frac{1}{2}$  W., clears them also. There is a good passage within the Crow Rocks, by keeping near the coast; but unless the weather be fine, and the water smooth, it should never be attempted.

Between Lenny Head and the entrance of Milford Haven is Fresh water Bay, the ground of which is foul and not fit for anchorage: the flood-tide sets into it, and there is generally a heavy swell from the westward.

The Porgus Bank.—About one mile W.N.W. from Lenny Head lies the east end of Porgus or Turbot Bank, stretching thence in a N.W.  $\frac{1}{2}$  W. direction, about  $2\frac{1}{2}$  miles; its shoalest part has 34 feet on it, and is only one mile in extent: the marks being the Middle Crow Rock, a little within Saddle Head; Warren Steeple on with the north side of Blackpole Point; Sheep Island N.E.  $\frac{1}{2}$  N., distant 2 miles; the outer end of Rat Island on with a white patch in St. Ishmael's Cliff; and Moorhouse over the middle of Monkhaven.

The marks for the inner end of the shoal are, the Middle Crow Rock, half way between Saddle Head and Flimstone Head; Lenny Head, E.S.E., distant one mile; Dale Point just shut in with Sheep Island; and St. Ann's Lighthouses in one bearing N. by W.  $\frac{1}{2}$  W.

The marks for its outer end are, the Saddle Head, half way between the Middle Crow Rock and Flimstone Head; Warren's Steeple on with the north side of Blackpole Point; and Haskard House, a little without Rat Island. The shoal part of the bank, as before said, is only one mile in length, and close to both ends there are 7 fathoms each way.

### *Directions for Sailing up the Bristol Channel.*

Vessels entering the Bristol Channel from the westward, may pass either to the

northward or southward of Lundy Island, as most convenient; and having passed that island, it will be found most advantageous to keep towards the south shore; as they will thereby avoid encountering any of those shoals which lie scattered along by the Welsh Coast, as before described.

The bearing and distance from the north end of Lundy Island to Flatholm Lighthouse are, as before said, E.S.E.  $\frac{1}{2}$  E., 20 leagues.

Those sailing up to the northward of the island should pass it at a distance not exceeding 3 leagues; they will then, if by day, be clearly in view of the island; and if by night, may readily perceive its lighthouse. In the fair-way will be found 33, 26, 20, 17, 15, and 11 fathoms, the depths decreasing as you advance easterly; and as you proceed upwards from Lundy, the land on both sides will be seen distinctly. Should you fall in to the southward of Lundy Island, you must be careful, especially with a northerly wind, that you be not driven into Barnastaple Bay. If the wind will permit, the best course will be to steer in mid-channel between Lundy Island and Hartland Point, giving Baggy and Morte Points a good berth; you may then run along by the English shore, at about a mile from the land, free from danger, until you get abreast of the Culver Sand, which you must pass to the northward of, and at a convenient distance, as the flood tide sets strong across it, into Bridgewater Bay. This may easily be done by keeping the land to the westward well open of the Foreland; but care must be taken to avoid the One Fathom Bank, which lies about 4 miles to the westward of Flatholm; therefore, as soon as you are within 5 or  $4\frac{1}{2}$  miles of that island, bring Potishead Point open to the southward of it, and it will clear that bank. Flatholm Light may be seen by night some distance to the westward of the Culver Sand. You must pass within a cable's length of Flatholm: having passed it, steer more to the northward, until the high land of Minehead comes on the middle of that island, and proceed in that direction until you are about 4 miles beyond it; you will then be to the northward of the English Grounds, and Potishead Point on with, or a little open to the northward of, Blackmore Head, will lead you up clear of that danger: your course will be about E. by S., but you must also be careful to avoid the Welsh Grounds, which lie on your larboard side, and are steep close to. Your soundings from Flatholm in the fair channel to Potishead Point, will be 9, 13, 9, 5, 6, and 7 fathoms, or more, according to the time of tides; the latter depth will be found not far from the point. The anchoring mark off Potishead is, a little white house on the cliff near the fort in a line with the flagstaff of the fort: the ground from Potishead to the river Avon is foul, but vessels may anchor off the entrance of the river, in 6 fathoms at low water, on clay.

Moderate-sized vessels may venture across the English Grounds, at half flood, for spring tides generally rise  $7\frac{1}{2}$  or 8 fathoms; but the Welsh Grounds should be carefully avoided: they are steep-to, all their length.

Pilots may be obtained either at Lundy Island or Flatholm.

Vessels sailing up the Bristol Channel by night should keep along by the English coast, from Lundy to Hurstone Point, in 13 to 15 fathoms water, and then haul over for Flatholm, but, as before observed, be particularly careful to allow for the operation of the flood tide; but, if the weather be hazy when you are abreast of Hurstone Point, it will be better to cross over to the coast of Wales, between the Ness Point and Sully Island, as the shore is moderately bold. Here you may run along shore, and consequently pass to the northward of the One Fathom Bank, which having done, steer out between it and the Flatholm, and proceed as before directed.

But, if bound to Cardiff Road, you may round the Isle of Sully and Orlop Point, at about half a mile distance, to avoid the Wolves, and then haul up to the northward for the Road.

The buoys laid off the Monkstone, Wolves, Tuskar, and Woolhouse rocks, are to be considered as temporarily placed, it being the intention of Trinity House to cause beacons to be erected on those rocks, if practicable.

### *Milford Haven.*

Milford Haven is generally considered as the most capacious and the most secure harbour in the British Islands. It may be entered without a pilot, either by night or by day (by taking the tide), even with contrary winds. Those who run in without anchor or cable, may run on shore on soft oaze, and lie safely.

The coast, at the entrance, is about the height of the land near Plymouth; and, on St. Ann's Point, upon the west side, stand two lighthouses, hereafter described. This point bears N.E.  $\frac{1}{2}$  N., at the distance of 33 leagues from Cape Cornwall; N.  $\frac{1}{2}$  W.  $15\frac{1}{2}$  leagues from Hartland Point, and N.  $\frac{1}{2}$  W. nearly 12 leagues from the north end of Lundy Island.

The entrance is rather more than  $1\frac{1}{2}$  mile wide in the narrowest part, and the depth of water is 10 fathoms. Two little islands lie near the shore on the east side, of which the outer one, and largest, called Sheep Island, lies one mile and three-quarters S.E.  $\frac{1}{2}$  E. from St. Ann's Point; and the inner one, or Rat Island, is nearly half a mile to the northward of the former.

The only dangers in the entrance are Chapel Rock, or Rat Island Shoal, and the Harbour Rock; the first of these is small, has 16 feet on it at low spring ebbs, and lies nearly one-third of a mile west from Rat Island. Its thwart-mark is Flimstone Chapel, on with the opening between Sheep Island and the coast, bearing about S.S.E.  $\frac{1}{2}$  E. The Harbour Rock is also small, has a similar depth of water on it, and lies about two cables' length N.W.  $\frac{1}{4}$  W. from Thorn Island; the mark for it is the north coast of Nangle, next to Thorn Island, just open to the northward of that island. The channel between these shoals and the western shore is nearly a mile in breadth.

The course in to abreast of Nangle Point is about N.E.  $\frac{1}{4}$  E. On the larboard side within, to the northward of Dale Castle, is Dale Road, where you may lie land-locked from all but easterly winds, in 2 fathoms at low water, with Sheep Island on with Dale Point. Large ships should lie farther out, at about a cable and a half N.N.E.  $\frac{1}{2}$  E. from Dale Point, in 3 to 4 fathoms water. Be cautious of not mistaking a bay to the southward of Dale Point for Dale Road, as it is dangerous.

The Stack is a large high rock, steep to on all sides, the east excepted, from which a ledge extends south-eastward a cable and a half; there is also a small rock on its western side. It bears from Thorn Island E.  $\frac{1}{2}$  N. a large mile distance, and lies at about one-third of the distance over from Hook Point, on the north shore of the haven. The channel on the south side of the Stack is generally used, and is above half a mile wide, having from 9 to 13 fathoms water, with good anchorage near the south shore, and quite land-locked.

Nangle Bay is a large mile S.S.E. from the Stack Rock, in which the ground is clear and good; and in case of loss of anchor and cables, ships may safely run aground on soft oaze, by keeping near mid-channel between Nangle and Pulchraan Points.

The quarantine hulks are moored off Nangle in 14 fathoms water, the ground

being marked out by buoys. Vessels under quarantine lie to the southward of the hulks.

Hubberstone, or Man-of War's Road, is the usual and most convenient anchorage for large ships: it is about 4 miles to the E.S.E. of Dale Point. In sailing for it keep in mid-channel until the town of Milford bears N.E. by E., when you may anchor in 10 or 11 fathoms water. In working up to this place, be careful to avoid a flat shelf, which extends nearly a cable's length from the north shore, between South Hook Point and Hubberstone Point; and also that which stretches off from the south shore, from Popton Point to Pennermouth, and thence to Patter Church Point. To avoid these shelves, on either side, stand no nearer to the shore than  $1\frac{1}{2}$  cable's length. The Stack kept a little to the southward of Dale Valley, will lead clear to the northward of the shelf on the south side.

Ware Ledge extends about a cable's length to the southward from Ware Point, and has a nun-buoy upon it. The Stack on with, or a little to the northward of, Dale Valley, will lead to the southward of it.

Carr Rocks.—These rocks lie about N.  $\frac{1}{2}$  W. nearly a quarter of a mile from the turret or watch-house on Patter Church Point battery: they dry at four hours' ebb. To avoid them, and a shoal of nine feet, which lies to the northward of them, keep Ware Point just on with or a little to the southward of the bluff head at Bullwell. The thwart-mark for these rocks is the west end of the battery in a line with the east end of Patter Church: a vane buoy is placed upon their extremity.

About a quarter of a mile east of the Carr Rocks is a sand-bank, about  $1\frac{1}{2}$  cables in length, with 9 feet on it at low water, and is distinguished by a nun-buoy. This will be avoided by keeping Ware Point on with the buoy of the Carr Rocks. When you have passed this shoal, you may haul in for the dock-yard, at Patter Church, which is only at a short distance within the point. The whole length of the dock-yard is bold close to, and there is good anchorage off it in 6 or 7 fathoms; but from the southeast part of the dock-yard, to the point opposite Nayland, is a bed of soft mud, which should be approached with caution.

Nayland Road lies within these shoals, at about  $8\frac{1}{2}$  miles from St. Ann's Point; the best anchorage for large ships is with Ware Point, about a sail's breadth open of Nayland Point, and Barnlake N.  $\frac{1}{2}$  W. in 8 fathoms, on muddy ground. Between this and the shore of Barnlake there is some foul ground, extending half a cable's length from the shore, which must be avoided. There is sufficient water for the largest ships to go 4 or 5 miles above Nayland, and the anchorage good most of the way. Small vessels, with spring tides, may go up to the town of Haverfordwest.

St. Ann's Lights.—The present lighthouses on St. Ann's Head were first lighted in June 1800. The lights are on the improved principle, with Argand lamps and reflectors. The low lighthouse, which is situated on the extremity of the head, is 15 feet high, has its lantern 160 feet above the level of the sea, and exhibits a strong continued light from the island Skomar northward round to seaward, and up the harbour as far as Hubberstone.

The high lighthouse is 45 feet high: the light is elevated 195 feet above the level of the sea, and bears from the low light N.  $45^{\circ}$  W. by the true meridian, or N. by W.  $\frac{1}{2}$  W. by compass, and is distant from the low light 203 yards. No light is exhibited up the harbour from this lighthouse, but it appears equally as strong as the low light from the island of Skomar to Lenny Head.

When the lights are in one, or when the lower light is directly under the upper

one, this line of direction will lead about one third of a mile without the Crow Rock, and thereby ships may round Lenny Head in safety, provided the low light be not brought to the westward of the high light, which, in working off that point, must be attended to.

The Porgus Bank has already been described.

To the N.N.W. of St. Ann's Point lie the islands of Skokam and Skomar, with a multitude of rocks, which render the navigation thence to St. David's Head very dangerous.

Skokam is a small rocky island, lying 4 miles N.W.  $\frac{1}{4}$  N. from St. Ann's Point.

Skomar is also a rocky island, about three times the size of Skokam, lying  $1\frac{1}{2}$  mile N. by E. from it, and about half a mile to the westward of St. Bride's Head, which lies  $4\frac{1}{4}$  miles N. by W.  $\frac{1}{4}$  W. from St. Ann's Point. Between these islands, and between them and the main, there are several sunken rocks, and, although there is plenty of water, no one should attempt these channels without being well acquainted with the dangers.

Grasholm is a high, steep, round rock, lying 6 miles W.N.W. from Skomar: it is the first land seen coming from the westward towards Milford Haven. About 2 leagues W.N.W. from Grasholm are the rocks called the Smalls, on one of which is a lighthouse.

The Smalls Lighthouse is erected upon the main rock of the Smalls, which is about 50 yards in length S.E. and N.W. To the S.E. of this are four smaller ones, that appear before low water, extending in a line about 100 fathoms, and a sunken rock still further: there is a depth of 30 or 40 fathoms close to them.

The lighthouse bears from St. Ann's Point N.W. by W. about  $18\frac{1}{2}$  miles, and from Cape Cornwall N.N.E.  $\frac{1}{4}$  E. 33 leagues.

The Hats and Barrels are two ledges of rocks lying between the Grasholm and the Smalls. Part of the Barrel uncovers at half ebb, and bears from the Smalls Lighthouse S.E. by E. nearly 4 miles. The tide runs over them with great rapidity, occasioning great overfalls and dangerous whirls to the southward. The greatest care and attention is necessary to keep clear of them, particularly with light winds, at night or in hazy weather.

Ramsey Island is about  $1\frac{1}{4}$  mile in length, and lies N. by E. about  $6\frac{1}{2}$  miles from Skomar, and about one-third of a mile to the westward of Penmanmillan Point.

St. Bride's Bay lies between Ramsey Island and Skomar, and runs in to the eastward nearly 8 miles: there is good anchorage in it with the wind from N.E. to S., in from 7 to 9 fathoms water.

In the S.E. corner of the bay, is Goldtop Road or Little Haven, where vessels drawing 14 or 15 feet of water may ride safely from the winds as far to the westward as W.S.W. in 3 or 4 fathoms water, on sandy ground, with Goldtop or Burrow Head bearing W.  $\frac{1}{4}$  S., distant a quarter of a mile. There is a current on this side of the bay, which sets with the ebb to the westward for 9 hours, and turns about 2 hours before high water.

Solvach Creek is on the north side of the bay, where vessels of 10 or 12 feet draught may lie aground near the quay, or ride in the mouth of the creek in 3 fathoms water; but when the wind blows from between the south and west, a heavy sea sets in, which makes it necessary to keep on the east side of the rocks, called the Scrabs or Scars, when going in. These rocks lie in detached patches: and the outer extremity, which is uncovered at low water, lies  $1\frac{1}{2}$  mile S.W. by W.  $\frac{1}{2}$  W. from the entrance.

The entrance of the Creek is only 2 cables' length wide: the highest part of the

rocks, called the Skars and Scrabs, lead to it. About half a cable's length from the shore, on each side, there is a small rock always above water; between that on the east side and the shore, it dries at low water. To go in, leave the westernmost rock on the starboard side, and keep a little nearer to the shore than to the rock: in the channel there are 3 fathoms water. The channel between the two rocks is a little nearer to the westernmost, with 2 fathoms water in it.

Ramsey Sound is between Ramsey Island and the main, through which small vessels may pass in safety; there are in it from 10 to 14 fathoms water; but the stream is irregular, and runs through it with great rapidity, the stream setting northward from half flood until half ebb on the shore, on spring tides, at the rate of 6 knots. It has also several dangers in it, exclusive of the Bitches and Whelps, a ridge above water, extending from the shore of Ramsey more than half way down from the northward. The Horse-shoe Rock lies about  $1\frac{1}{2}$  cable's length southward from Penmanmillan Point, and dries at half ebb. The Great Horse Rock lies about half a mile N. by E.  $\frac{1}{4}$  E. from Penmanmillan Point, and dries with spring tides only; and a quarter of a mile beyond it, in the same direction, lies the Little Horse Rock, with  $2\frac{1}{2}$  fathoms on them at low water. To clear them, keep the west part of Skomar Island open of Penmanmillan Point. Vessels may, however, stop a tide here, at about a cable's length from the shore, and about one-third of a mile to the northward of the Bitches and Whelps, in 7 fathoms, on sandy ground; in other parts the bottom is foul and rocky, and even here ships should make no unnecessary stay, as the eddies of the tides are very irregular.

Bishop and Clerks.—These are four remarkable rocks to the westward of Ramsey Island, always above water. About half way between the middle of these rocks and Ramsey are three other rocks that dry before low water; and two others, lying about three-quarters of a mile S.E. by E.  $\frac{1}{4}$  E. from the North Bishop, which dry about half-ebb. Therefore, in sailing through between these rocks and Ramsey, pass within half a mile of Ramsey to avoid the first three rocks, and within one mile of St. David's Head, to avoid the other two.

The lighthouse on the southern rock of the Bishops was completed in January, 1839. The light, which revolves, and appears full in all directions, at short and regular intervals, may be seen between four and five leagues off.

The Bass Bank, which lies nearly in the direction of the coast, at the distance of  $2\frac{1}{2}$  miles from St. David's Head, is, in length, from 11 fathoms at the S.W. end, to 20 fathoms at the N.E. end, nearly 6 miles. Its shoalest part, on which there are 3 fathoms, lies one mile from the S.W. end, with St. David's Head bearing S.  $\frac{1}{4}$  E., distant  $2\frac{1}{2}$  miles; and the thwart mark for it is, Trelethan House, in Whissand Bay, in a line with the extremity of St. David's Head. On this part of the bank the sea breaks heavily, and the tides run very strongly, nearly in the direction of the bank. From the depth of 8 fathoms near the S.W. end, the west end of Skomar may be seen through the middle of Ramsey Sound. To sail out or in, between this bank and the North Bishop, keep within a mile of the Bishop, or keep St. David's Head, bearing S.E.

From St. David's Head, on the coast of Wales, to Carnsore Point, the southeast extremity of Ireland, the bearing and distance are N.W.  $\frac{1}{4}$  N. 39 miles.

#### *Tides between Hartland Point and St. David's Head.*

On the full and change days of the moon it is high water on Barnstaple Bar at 5h. 30m.; at Lundy Island, 5h. 15m.; at Ilfracombe, 5h. 30m.; at the Foreland, 5h. 35m.; at Minehead, 6h.; at the Flatholm, 6h. 35m.; in King Road, 6h. 50m.;

at the Mumbles, 6h. 10m.; on Burry Bar, in Caermarthen Bay, about 6h.; at Caldy and Tenby, 5h. 50m.; at St. Gowen's Head, and thence to Grasholm, 5h. 30m.; in Milford Haven, 6h.; and St. David's Head, 6h.

At Lundy Island ordinary spring tides rise 27 feet, equinoctial springs 31 feet, and neaps 13 feet. In Barnstaple Bay ordinary springs rise 25 feet, equinoctial 28 feet, and neaps 15 feet. In this bay, at from two to three miles from shore, a gentle stream sets to the eastward, from the time of low water to four hours flood, and then to the westward until low water again. In mid-channel, between this bay and Lundy Island, the streams of flood and ebb set tide and tide each way, according to the time of flowing on the shore, at the rate of three miles an hour on springs and two upon the neaps, allowing half an hour slacking and veering out.

At the entrance of the Bristol Channel spring tides rise from 22 to 26 feet; but farther up, as that channel narrows, or contracts in its breadth, the velocity and vertical rise increase in proportion; so much so that, at King Road, it rises to seven and eight fathoms, and has been known still higher, while at Chepstow it sometimes exceeds nine fathoms. Between Ness Point and Bridgewater Bay the tide sets with great velocity over the Culver Sand.

At the mouth of the Parret or Bridgewater River ordinary springs rise 35 and neaps 18 feet; within the Nash Sands ordinary springs rise 33, equinoctial springs 38, and neaps 17 feet; on Swansea Bar ordinary springs rise 30, equinoctial springs 33, and neaps 15 feet; on the bar of Burry ordinary springs rise 28 and neaps 14 feet; on Caermarthen Bar ordinary springs rise 26 and neaps 13 feet.

It should be understood that, within the range of Swansea Bay and its offing, at about five miles west of the Skarweathers, the first quarter flood sets directly toward them; after which, and until half flood, it sweeps one mile outside, nearing the west end of the Nash Sands, and ultimately setting, till high water, S.S.E. by compass, which points well outside of all. It averages a rate of 4 and 5 knots on springs and 3 upon neaps, and changes exactly at the same time that it ceases to rise on the shore, but slack water always lasts half an hour. Midway between the Western Skarweather and Mumbles Head the flood and ebb set W.N.W. and E.S.E. tide and tide, though farther in the ebb sets directly from Swansea and Neath. One mile outside the Mumbles, and close in shore, a sharp eddy sweeps between Swansea and the Mumbles Head, from half flood to low water.

Directly off Rhwchiwyns Point to the S.E. of the bay, the ebb stream branches through the Shord Channel, on the north side of the Skarweather, and continues a W.N.W. and W. by N. course from half ebb till low water; the flood stream returning over the same ground between low water and half flood.

Between Milford Haven and Caldy Island the flood stream runs eastward; but from Milford to Ramsey Island it runs to the northward along the coast, until half-past 8 o'clock. Between the Grasholm and Smalls it runs northward until 9 o'clock; it then changes, and sets to the southward for six hours. The northern stream shifts gradually from N.N.W. to N.E., and the southern stream from S.S.E. to S.W. From Ramsey Island towards Cardigan the flood sets to the eastward, and thence along shore.

Through Ramsey Sound the tide sets to the northward, from half flood until half ebb, on the shore; and spring tides run 6 knots. Off Lenny Head, the spring tides' stream runs at the rate of about 3 knots; neap stream, only one or one and a half. Between Skomar and Grasholm, the strongest flood stream sets to the northward, at the rate of 3 to 4 knots; between Grasholm and the Barrel, 5 knots; and be-



tween the Barrel and the Smalls, at the rate of 6 knots; neaps about 2½. On the west of the Bishop and Clerks, spring tides run with the same velocity as at the Smalls. Between the North Bishop and the Bass Bank spring tides run at the rate of 5 knots; and off Strumble Head, 4 knots; and thence to the northward the velocity decreases.

Near the Smalls, and north of the shoals to Grasholm, the flood stream sets N.E. by N., and the ebb S.W. by S., with a mean velocity of 2½ knots. The stream of flood has been found to make 4½ hours after low water by the shore at St. Anne's Head. Duration about six hours each way with very little slack tide. But it has been observed that, over the shoals and through the different channels, the velocity of the tides is greatly increased, and there is reason for believing that on springs the rate is nearly six knots.

There is always a strong tide under these shoals, which is, of course, increased or decreased according to the vertical rise. This is of consequence when working up near them, as some advantage may, in the day time, be taken of it, by keeping on the proper side. Its influence will be manifest to any vessel thus situated, as she would nearly make her course good when under their lee, but swept away furiously on opening the different passages. Should it be desirable to have the true tide, it will, therefore, be requisite to keep on the north or south side of all the shoals, according to the ebb or flood.

*The Coast of Wales, from St. David's Head, to Aberystwith.*

From St. David's Head to Strumble Head, the bearing and distance are E.N.E. ½ E., 10½ miles: between these, at the distance of 5½ miles from the former, and close to the land, is Abercastle Island; and to the north-eastward of the island, at about three-quarters of a mile north from Abercastle Creek, lies Abercastle Shoal, with 3½ fathoms water on it. This will be avoided on the north side by keeping St. David's Head a sail's breadth open of Penclegheer Point. There are also some rocks and shoals, called the Sledges, lying about three-quarters of a mile from shore, between St. David's Head and Penclegheer Point: these dangers have from 13 to 16 fathoms water close to them.

Carrigonan Bay, at the extremity of Strumble Head, is a convenient place to stop a tide in, when the wind is to the eastward of north. The anchorage is about a cable's length to the southward of the island, with the sound of the island open, in 7 fathom's water, on good holding ground: in most other parts of the bay the bottom is foul. Should the wind shift round to the westward, a vessel of 10 or 12 feet draught may run through between the island and the main, by keeping in mid-channel, or rather nearer to the island.

Fisgard Bay is about 5 miles to the eastward of Strumble Head, and is a good roadstead with all winds, except those from north to east: at the entrance it is more than three miles broad, and it has on the S.W. side good anchorage in 3 or 3½ fathoms water, on sand and clay, with the Cow Rock, which is always above water, bearing N.W. by N. from one quarter to half a mile distant. The Cow Rock is very remarkable, and lies about three-quarters of a mile within Anglas Point. There are several other rocks within it, and others without it, to the distance of nearly two-third's of a cable's length; the best anchorage is about one-third of a mile S. by W. from it, in 3½ to 4½ fathoms; the ground is good for holding, and you will lie better sheltered from northerly and N.W. winds. Vessels of 10 or 12 feet draught may go up to the quay on spring tides.

This bay contributes much to the safety of vessels frequenting Cardigan Bay, &c.

Here they may find shelter from the strong southerly and westerly gales that prevail during the winter months; but they must be cautious of the strong northerly and N.E. winds or that season, which send a heavy sea into it. Small vessels have at times been forced on shore by them, by anchoring too openly in the bay. It is to be observed, however, that the ground is excellent, being sand over clay; and there is, in general, a sufficient depth of water for large ships at all times.

Porthueloid anchorage is situated on the east side of Fiscard Bay, near Dinas, at about 2 or  $2\frac{1}{2}$  cables' length to the southward of a remarkable rock, which is always above water, a little to the northward of a small sandy cove, and about  $2\frac{1}{2}$  cables' length from the shore, in 5 fathoms water, on gravelly bottom. Here the above-mentioned rock will appear open of the point near it, bearing about N.  $\frac{1}{2}$  E.; and vessels may lie safely with easterly winds: they may also lie farther to the south and west, but will not be so well sheltered.

Aberdinas Road.—This anchorage is off the middle of the bight, where Dinas houses are, on the east side of Dinas Head: vessels may stop here with westerly winds, in 3 or 4 fathoms water, on clean ground, a little more than two cables' length from high water mark.

Newport Harbour.—The bar and channel of this harbour lie about half a cable's length from the shore, directly below the village of Newport, and about two miles to the eastward of Dinas Head. There are 13 feet water on the bar at high water spring tides, and 7 feet at neap tides: it is therefore fit for small vessels only, which, when in, lie aground on fine sand, sufficiently sheltered from all winds. The channel may generally be distinguished by the appearance of the water in it; but there are no other marks for it. A vessel may stop in 3 or 4 fathoms water, on clean sand, on the eastern side of Newport Bay, off Pystile, at about half a mile from shore.

Cardigan Harbour, &c.—E.  $\frac{1}{2}$  S. 5 leagues from Strumble Head is Kemaes Head, and 2 miles E.  $\frac{1}{2}$  N. from it, is Cardigan Island. Between this island and Kemaes Head lies Cardigan Harbour, fit only for small vessels that can take the ground easily: the channel is nearest the east side of the bay, and has 14 feet water in it on a spring flood, but it is liable to shift; therefore those who are not well acquainted should take a pilot. In moderate weather a ship may anchor any where in the road without the harbour, in about 6 fathoms water.

Along the coast of Cardiganshire there are several ledges or rocky flats, which dry every spring tide; but of these, there are none without the headlands, except the Patches and Sarn Gynfelyn.

From Cardigan Island to New Kay Head, the bearing and distance are, east  $12\frac{1}{2}$  miles; and to Aberystwith, E. by N. 27 miles. There is tolerably good shelter for small vessels from W.N.W. winds, to the eastward and southward of New Kay Head, at about  $1\frac{1}{2}$  cable's length from shore, in  $2\frac{1}{2}$  fathoms water, with Penwiger Point and the house a little to the westward of it in a line, bearing about W. by N. About half way between this anchorage and the mouth of Llanina rivulet, there is a rock that dries with spring ebbs only.

Aberaeron is a little port, lying 4 miles E.  $\frac{1}{2}$  S. from New Kay Head: within this line of bearing there are several patches of foul ground; and to the eastward of the entrance there is a shoal which extends a mile from the coast, with from 2 to 6 feet water on it; there is also a rocky spot, nearly dry at low water, half a mile to the W.N.W. Two lights in a line, bearing about S.E.  $\frac{1}{4}$  S., are the marks for its entrance by night.

Aberystwith Harbour.—This is a narrow creek, with a bar lying across the en-

trance. At about a cable's length within the bar, a perch is placed, and beyond it, upon the land, a white moveable board: these kept in a line will lead directly over it. This harbour may be distinguished at a distance by Peny Dinas Mountain, which rises remarkably steep at the south end, and by a ruinous castle at the N.W. end of the town: it is fit for vessels of 9 or 10 feet draught only. In the night, if any vessel is seen off, two lights are placed, one on the perch, and the other on the white board, for a direction over the bar.

## SECTION X.

### THE SOUTH COAST OF IRELAND FROM CARNSORE POINT TO THE RIVER SHANNON.

Carnsore Point is the S.E. extremity of Ireland, and bears from St. David's Head, in Wales, N.W.  $\frac{1}{2}$  N., distant 44 miles; from the Smalls Lighthouse, N. by W.  $\frac{1}{2}$  W. 40 miles, and from Cape Cornwall, N. by E.  $\frac{1}{2}$  E.,  $41\frac{1}{2}$  leagues.

The Tuskar is a remarkable high rock, situated in latitude  $52^{\circ} 12' 9''$ , longitude  $6^{\circ} 12' 37''$ , at the distance of 7 miles E. by S.  $\frac{1}{4}$  S. from Carnsore Point. It is distinguished by a lighthouse, constructed on the principle of that on the Eddy-stone, in the English Channel, was first lighted on the evening of the 4th of June, 1815, and is regularly continued from sunset to sunrise. The light is revolving, and has three faces, one of which appears refulgent every two minutes. On one side a shade of red glass is interposed, so that, in each revolution, one face appears of a deep red colour every six minutes. Every half minute a bell is tolled to denote the proximity of the rock in foggy weather.

The rock is about 20 feet above the level of the sea at high water, and the elevation of the lighthouse 81 feet above the base. Ships coming from the westward, and bound through St. George's Channel, should endeavour to see the rock, or its light, before they shape their course to the northward. The light may be seen 15 miles in clear weather.

About half a mile or more to the south-westward of the Tuskar, there are some sunken rocks, with only 5 feet water on them, to avoid which keep a mile from that side of the Tuskar. Nearly midway between the Tuskar and the main lies the Bailies Bank, the south end of which bears from the Tuskar W. by N., and from Carnsore Point E.S.E., about  $3\frac{1}{2}$  miles; it thence extends to N.N.E. about  $2\frac{1}{2}$  miles, is very narrow, and has 3 fathoms of water on it. To avoid this bank on the east side, keep nearer to the Tuskar than to the main: near the sand in this channel there are 16 fathoms water. In a bay, opposite to the west side of this sand, ships may anchor in 6 or 7 fathoms, at about three-quarters of a mile from shore.

The Splough is a rocky shoal of 3 feet, lying about a mile S.E. of Greenore Point; and at a short distance from that point lie some rocks, partly above water, called the Carricks. There are also some rocks, of a similar description, lying near to the eastward and northward of Carnsore Point, called the Wilkeens.

The New Grounds is a sandy shoal lying N.E. and S.W., about 3 miles in length and a quarter of a mile in breadth: the least water on it is 3 feet, which is about one third from its S.W. end; on the N.E. end are from 3 to 4 fathoms. Its S.W. end lies E.  $\frac{1}{2}$  S.  $3\frac{1}{4}$  miles from Greenore Point and N. by E. 4 miles from the Tuskar; and at this end the Whitehouse of Roslare appears in a line with the

south end of Fort Mountain, near the southernmost hummock. At the N.E. end Greenore Point bears W.S.W.  $\frac{1}{4}$  W. and Fort Point N.W.

Holden's Bed is a bank about 3 miles in length N.E. by E. and S.W. by W., and a large mile in breadth. Its south end lies about  $1\frac{1}{2}$  mile N.E.  $\frac{1}{2}$  N. from Greenore Point, and has one fathom on it; on the other parts there are from one-half to 3 fathoms. To sail along the S.W. end of it keep the southernmost of two high hills N.W., or the northern hill N.W. by N. To sail between it and the New Grounds, keep Tarrow Hill a little without Cahore Point.

The Dogger Sand lies near the entrance of Wexford Harbour, and is about two miles in length from the N.E. to S.W.; the former part frequently shifts, and always dries; the other parts dry gradually. This sand may be avoided, and also the spit off Raven Point, by bringing the Fort Houses W.  $\frac{1}{2}$  S. and the extremity of Fort Point west.

Wexford Harbour is clean and sufficiently sheltered, but too shallow for vessels drawing more than 9 feet water, and those with neap tides must have 4 hours flood to go in: the entrance lies between the north end of the Dogger Sand and the Raven Spit. To sail in, pass at about a cable's length from the dry part of the Dogger, or keep the houses of Fort W.  $\frac{1}{2}$  S., or the extremity of Fort Point west; give the point a berth in passing it, then run in and anchor on the west side of it, at a cable's length or two from the shore.

If necessary, vessels may anchor in Greenore Bay off Roslare House in any depth from 2 to 4 fathoms.

Waterford Harbour.—The Hook Point of Waterford, on which a lighthouse stands, bears from the Longships' lighthouse off the Land's End of England N.  $\frac{1}{4}$  E., distant  $42\frac{1}{2}$  leagues, and from the Smalls' lighthouse N.W. by W., distant 18 leagues. The Hook lighthouse is 139 feet high, and exhibits a bright fixed light.

The eastern side of the deep estuary of the river Suir is formed by Hook Point, on which there is a lofty tower with a bright fixed light. The breadth of the channel between this head and Red Point, on the opposite side of the river, is somewhat more than 2 miles, and the soundings between them vary from 5 to 10 fathoms. The western shore between Red Point, and a remarkable promontory called Creden Head, is tolerably bold; but along the eastern shore there is a dangerous rocky flat, which extends with an irregular edge from Church Town up as far as the fort of Duncannon. From Creden Head also, a corresponding flat extends as far as the town of Passage, by which the channel is gradually contracted, so as not to exceed one-third of a mile when abreast of the fort. The flats which defend the western shore are denominated Woods Town and Passage Strands, with the long bank of Drumore; that to the eastward is called the Duncannon or Ballistrav Strand; the two former and the last dry wholly at low water, the Drumore only partially.

Besides these, a bar of shingle and sand stretches nearly across the channel, in an E.N.E. and W.S.W. direction, between Creden Head and Duncannon Fort; it lies above the former three-quarters of a mile, with only 12 feet on it at low water great spring tides, and in many places less.

Creden Head lies  $3\frac{1}{2}$  miles from the Hook Light-house, in the direction of N. by E., and very close to it lie the rocks called the Woolpacks, which indeed constitute part of the head land. The land between Swiny Point and Creden Head is high, while that between the Hook and Broom Hill is altogether as low; and the light-house being whitewashed, is not readily distinguished when coming from the westward during the day, because there is no dark contrasting land behind it. The

soundings between the Hook Lighthouse and Duncannon Fort are, with the exception of the bar above mentioned, tolerably regular, the deepest water being rather nearest to the eastern than to the western shore, so that a vessel may work in at any time to an anchorage between the Bar and Duncannon Fort by common attention to the lead, but a pilot is necessary to proceed farther. In all parts of the channel there is tolerable shelter, except with the wind from between W.S.W. and S. by E.

Coming from the southward, and bound into the River Suir, steer for Creden Head, giving the Hook Point a berth, when rounding it, of half a mile, in order to avoid the in-shore tides which are irregular. When abreast of Creden Head, which is bold close to, steer for Duncannon Fort, taking care to keep as nearly as possible upon a straight line drawn from the former to the latter, which will clear the Ballistraw Spit on the starboard hand, and the Drumore Bank on the other. The north-western angle of Duncannon Fort bears from the pitch of Creden Head N.E.  $\frac{1}{2}$  N., and the distance between them is  $2\frac{1}{4}$  miles. When approaching Duncannon Fort, keep your lead going, and be cautious of the edge of the Ballistraw Sand, which is connected therewith, endeavouring to round the fort at  $1\frac{1}{2}$  cable's distance; then bring the westernmost extremity of Broom Hill in one with the N.W. extremity of the fort, and when distant from the latter a quarter or half a mile, you may anchor in from 2 to 5 fathoms water, with tolerably good ground.

The above mark will also lead you up in the fairway of the channel towards Ballyhack Church, which is white; and as soon as the Perch, which stands on the north-eastern edge of the Drumore Bank, appears in one with the northern part of the town of Passage, you may steer for the latter, taking care to give the Perch a berth of a cable's length at least. The Perch is conspicuous, having a small cask, and it stands close to the south-eastward of a salmon weir. Two lights in Duncannon Fort, one above the other, were formerly exhibited, to direct vessels to that point; but an additional lighthouse has lately been erected at the distance of  $5\frac{1}{2}$  cables' length, N.N.E.  $\frac{1}{4}$  E., from them. These two lighthouses kept in a line will lead in the best channel across the bar. The tower of the new lighthouse is circular and of a white colour; and carries a fixed bright light 115 feet above high water. The lower light of the Fort lighthouse is now only shown from half flood to half ebb. A small tongued shoal runs off southerly from Ballyhack Point for above half a cable's length, on which the salmon weir is erected: the southern part of this shoal has only 3 feet on it at low water. In order to avoid it, do not give the perch, before alluded to, a berth of more than a cable's length; or, keep the north-western peak of Futtock Hill in one with the low point of land which projects north-westerly from Ballyhack.

It is not, however, probable that any vessel without a pilot would venture above Duncannon anchorage, still less that she would attempt to run further than Passage Town, between which and Ballyhack there is good anchorage one-third nearer to the latter, by which the greatest strength of the tide, both ebb and flood, will be avoided, and in from 3 to 5 fathoms water.

Above Ballyhack, Seedes Bank on the eastern shore, and another shoal on the opposite side, render the navigation tortuous and difficult; and as the course of the river changes at Cheek Point from north-east to south-west, a skilful pilot and the assistance of the flood are necessary to carry any sailing vessel up to Waterford. When there, 2 fathoms will be found at low water at a ship's length from the handsome quay of that thriving city.

On the western side of the entrance into Waterford, a pier was constructed for

the reception of the Post office packets from Milford Haven; they lay afloat there at all times, with good shelter, and at night were led in by a light on the Pier-head, which to the southward appears red, and bright to the northward of the pier; but those packets are now sent up, by a circuitous passage, to the quay of Waterford. Though Dunmore Pier affords a secure anchorage from westerly gales, yet it is ill calculated for a refuge harbour, from its very confined space, and from its shallowness, there being within the pier-head only one spot with more than 14 feet, and 9 to 12 being its usual depth at low water.

It is high water at Creden Head on full and change days at 5 hours and 20 minutes, and spring tides rise and fall 13 feet, though much depends on the direction of the wind. Southerly winds cause an additional elevation of 2 feet, and northerly winds an equal depression.

Directions for sailing in from sea.—Sailing in from sea for Waterford Harbour, you will descry the Sleamman Mountain, which should be brought to bear N.E., and on that bearing it will lead in sight of Hook Tower, which should not be approached nearer than 2 cables' length, in order to avoid falling into the irregular stream of tide which sets round it.

Swiny Head lies  $3\frac{1}{2}$  miles N.W.  $\frac{1}{2}$  W. from Hook Point, and about a quarter of a mile to the southward of this head, are three small islands called the Files Kirk, which are steep-to. About  $2\frac{1}{4}$  miles westward of Swiny Head is Brownston Head, and thence to Great Newtown Head, the bearing and distance are N.W.  $\frac{1}{2}$  W.  $2\frac{1}{4}$  miles.

Tramore Bay lies between Brownston Head and Great Newtown Head—is a place notorious for shipwrecks, and ought, therefore, to be carefully avoided. In thick or hazy weather, when the Hook Tower could not be seen, this bay has frequently been mistaken for the entrance of Waterford, and many ships have thereby been lost. Strong winds from S.S.E. to W.S.W. force a heavy rolling sea into it, and the flood tide sets with great velocity towards Rineshark Harbour, in the east side of it; which, operating together, render it almost impossible for a ship caught in the bay to weather the heads. The ground is so foul and rocky that cables have frequently been cut, and vessels thus lost. The north-west part of the bay is the only place where there is any possibility of saving the lives of the crew, or any part of the cargo; for the east side is so shoal and rocky, that ships get involved in terrible breakers at a considerable distance from shore.

But, in order to prevent such losses in future, and to distinguish this place from every other part of the coast, the Corporation for preserving and improving the port of Dublin, &c., have caused beacon-towers to be erected on each side of the bay; that is, on Brownston and Great Newtown Heads, with the intention of warning mariners to keep at a distance from this dangerous coast, as there is a strong indraught into this bay, which frequently draws into, and entangles vessels in it, when they approach too near. There are now three towers on Great Newtown Head, and two on Brownston Head; which, with the present lighthouse on Hook Point, distinctly point out those prominent points of the coast. On the central tower upon Great Newtown Head, is an Herculean statue, with one arm pointing towards the Hook Tower on the east; these objects, therefore, are too remarkable to be mistaken.

Rineshark Harbour, as before said, is in the eastern part of Tramore Bay; its entrance is narrow and dangerous, having neither perches nor buoys. There are 9 or 10 feet water in the channel at half tide, but the danger of getting on the point of sand that forms the entrance is so great, that no stranger should attempt it with-

out a pilot, unless in case of urgent necessity. In such case, endeavour to have 4 hours' flood, and keep within a cable's length of the eastern shore: having passed the Bar Rock, keep the lead going, as the channel is steep-to on each side, from Bassa Tierra Point inwards, where you may anchor in safety.

But observe, that if embayed here, when the wind renders it impossible to get out, it is considered best to run on shore in the N.W. part of the bay, rather than attempt the harbour, as this will afford the best chance of saving the lives of those on board.

From the Hook Point eastward.—Slade Bay is about  $1\frac{1}{2}$  mile north-eastward from the Hook lighthouse, and is generally foul and rocky. The best anchoring place is opposite a stone wall, which runs a little way up from the shore, with Slade Castle and Pier in a line, in 5 fathoms water, fine sandy bottom. Slade Pier dries at low water, and at high water spring tides there are only 11 feet water between the pier heads.

From the point next to the northward of Slade Harbour, a narrow ridge of rocks extends about three-quarters of a mile S. by E. It has only 2 feet on it at low water. This is called the bridge of St. Bricane; the mountain of Forth, which is about Wexford, kept open to the eastward of Bagenbon Head, will lead clear of it.

Feathard is a small harbour to the northward of Ingard Point; it dries before low water, and is fit for small vessels only. Between the pierheads there are 8 or 9 feet at high water, spring tides, and 6 or 7 at neap tides. A rocky ledge extends eastward about two cables' length from the extremity of the point: this may be avoided on the north side, when sailing in or out, by keeping an old castle, seen at the south end of Feathard Trees, on with the quay head. There is also a long rocky shoal, lying about half a mile to the eastward of Ingard Point, the least water on which is 5 feet. The mark for it is a summer-house, which stands below Feathard Trees, in a line with the before-mentioned castle. To the eastward of Feathard is the entrance of Bannow Water, and to the southeastward of it the Keroog Isles and Ballyteig Bay. Ballyteig Castle, or Crossfarnogue Point, lies 12 miles E. by S. from the Hook Point, and from the former to Carnsore Point the bearing and distance are E.S.E. southerly 8 miles.

The Saltees.—Nearly 4 leagues S.E. by E. from the Hook Lighthouse is the S.W. point of the Great Saltee Island, which thence extends to the N.E. about a mile and a half. The Little Saltee Island lies about two-thirds or three-quarters of a mile to the N.E. of the Great Saltee, and is about a mile in length in the same direction; this is connected to the main land, at Ballyteig Castle Point, from which it is distant about two miles, S. by W.  $\frac{1}{4}$  W., by a narrow ridge of large stones, having from 6 to 9 feet on it at low water, called St. Patrick's Bridge.

At half a mile to the northward of the S.W. point of the Little Saltee is a small rock with only 3 feet water on it; and S.W.  $\frac{1}{4}$  W., a cable's length from the same point, is another small rock, which appears at half ebb. From the N.E. part of the Great Saltee, extending northward about a quarter of a mile, there are two rocky shoals with one fathom water on them. These are avoided, when sailing between the Saltees, by keeping nearer to the little island than to the great one.

There is also anchorage off the N.W. point of the Great Saltee in 5 or 6 fathoms water.

Kunnymore Rock lies  $1\frac{1}{4}$  mile S.W. by S. from the S.W. point of the Great Saltee Island, and is always above water. Kunnibeg Rock lies about a mile S.W.  $\frac{1}{4}$  W. from Kunnymore, and from the S.W. point of the Great Saltee S.W.  $\frac{1}{4}$  S. 2 $\frac{1}{2}$  miles. This rock appears at half ebb. When Kunnymore Rock is in a line with

the south end of the Great Saltee you will be to the eastward of Kunnibeg Rock, and when Kunnymore Rock is open to the eastward of the Great Saltee Island you will be a little to the westward of it.

The Frayle Rocks lie nearly  $1\frac{1}{2}$  mile E.  $\frac{1}{2}$  N. from Kunnymore Rock, and about the same distance S.E. by E. from the south point of the Great Saltee Island: these are two rocks and appear at half ebb. The Brandy Rocks are also two in number, which dry at half ebb, and lie  $1\frac{1}{4}$  mile E.S.E. from Kunnymore Rock. Both the Frayle and the Brandy Rocks may be cleared on their west side by keeping the south end of the Great Saltee Island N.N.E.  $\frac{1}{2}$  E.; on their south side by keeping Kunnymore Rock N.W. by W.; and on the east side by keeping Balleyteig Castle open to the eastward of the Little Saltee Island.

The Saltees Lightvessel.—This vessel was moored off the Saltees on the 1st of September, 1824, with the Great Saltee bearing N.E.  $\frac{1}{2}$  E., distant about  $2\frac{1}{2}$  miles; the Hook Lighthouse of Waterford harbour, N.W.  $\frac{1}{4}$  N. 12 miles; and the Tuskar Lighthouse nearly E.  $\frac{1}{2}$  N.  $6\frac{1}{2}$  leagues. The station of the lightvessel is to the southwestward of the Kunnibeg Rock, and it has three masts, on two of which lights are hoisted. In foggy weather a bell is tolled.

From the south end of the Great Saltee to Carnsore Point, the bearing and distance are E.  $9\frac{1}{2}$  miles, and thence to the Tuskar Rock, on which there is a lighthouse, E. by S.  $\frac{1}{4}$  S. 7 miles.

About  $3\frac{1}{4}$  miles E. from the Little Saltee Island are two small rocks, called the Tuns.

The Black Rock, which is always above water, lies  $6\frac{1}{2}$  miles E.  $\frac{1}{2}$  S. from the south end of the Great Saltee Island,  $4\frac{1}{2}$  miles W. by S. from Carnsore Point, and 11 miles W. from the Tuskar Rock.

The Barrels are two rocks lying S.E. by S. about a mile from the Black Rock, and appear at half ebb. These may be avoided on the south side by passing at  $1\frac{1}{2}$  mile to the southward of the Black Rock until Greenore Point comes open to the S.E. of Carnsore Point. Vessels bound to the westward should keep Greenore Point open until the Black Rock bears N.  $\frac{1}{2}$  W.; they may then steer about W.  $\frac{1}{4}$  N. or W., and pass to the southward of the Saltees Lightvessel.

Tides between Great Newtown Head and Carnsore Point.—The times of high water, on the full and change days of the moon, are as follows:—In Tramore Bay at 5h. 15m., Hook Point of Waterford at 5h. 30m., and at the Saltee Islands at 5h. 50m.

Along the coast, from Waterford to Carnsore Point, the principal stream of flood sets in from the S.W. and runs along the south side of the Saltees and the Tuskar, and thence turns up to the northward into St. George's Channel: the ebb sets contrary. Between Tramore Bay and the Saltees the strongest springs run about 1 knot, near the Saltees 2 knots, and on the east side of the Tuskar 4 knots.

Three or four leagues off the Hook Point the tides set to the east and west during equal spaces of time, and the eastern stream continues to run until half-past eight o'clock.

Dungarvon Harbour lies on the west side of Tramore Bay, where vessels not drawing more than 10 feet may find good shelter, and lie on clean sand when left by the tide; vessels drawing more should not go in till high water. The shoalest part of the channel has only 3 feet at low water. At the quay of Dungarvon are 9 feet at high water spring tides, and 7 feet at neap tides; a short distance from the quay, there is 2 or 3 feet more water.

To enter the bay, keep Cruach Hill, the most western and tapering of the Dun-



garvon mountains, N. by E. In the mouth of this bay are two rocks always above water; the larger called Carrickapane, is nearly in the middle; pass on either side at half cable's length. From the other rock runs a ledge which extends to Ballinacouty. The Gainers Rock lies half a mile to the northward of Helwick Head, extending about half a mile from east to west, and has on it about 2 feet low water spring tides. To avoid this rock on the north side, keep the Castle at the Abbey of Dungarvon N. by W.; or keep the Abbey on the highest part of a hill about 2 miles N. by W. from Dungarvon. A dangerous ridge of sand extends southward along Ballinacouty point, and dries at low spring ebbs, making the channel very narrow. In waiting for the tide to go into Dungarvon, anchor off Ballinacouty, about half a cable's length from shore, the ground being there the best. About half flood, steer for Ballinacouty Point, and near the house, come no nearer than half a cable's length; or keep Ryland's Turret on with the sharpest point of Knockmeldown, until past the point, then steer N.W. by W. till Ryland's Turret appears in a line with the summit of Cruach Hill; then steer N.W. for Conegar Point, and come to an anchor off the town.

Youghal Harbour lies about 16 miles W.S.W. from Helwick Head; and though it affords shelter to vessels of 10 feet draught, it is seldom resorted to but by those immediately concerned in the trade of the port. You may anchor within, or to the northward of Cable Island, in from 3 to 6 fathoms water, in order to remain a tide, or preparatory to entering Youghal; but with south-westerly or south-easterly winds, standing off and on, is to be preferred. In order to fall in with the harbour of Youghal when coming in from the offing, keep Knockmeldown Hill N. by E.

This place is generally described as a bar harbour, and consequently that impression prevents its free use. The bar, however, is nothing more than a gradual decrease in the depth of water, in proportion as you approach the land, and this terminates in a cluster of sunken rocks and patches of rough ground, on each side of which a channel exists, and through these channels the tides, both ebb and flood, run strongly.

The leading mark through the western channel is, the eastern angle of a long high wall, jutting into the sea from the town, kept just perceptibly open of the most prominent perpendicular part of the south-western point, which will be then also nearly in one with a remarkable white house, to which as remarkable a white garden wall is attached, standing on the distant land at the head of the river. Run in with these objects in the positions above described, until you get within three cable's length of the south-western point, then steer in mid-channel, and anchor before the town. To go through the eastern channel, keep the extremity of Ardmore Head in sight to the southward of Black Ball Head, and steer in this direction until you bring the extreme of the eastern shore abreast the town, to the westward of the eastern point at the entrance, but no further; then steer in for the harbour, and anchor as before directed.

It is high water by the ground in Youghal at 5 o'clock, full and change, and the tide rises and falls at the springs 13 feet. There is never less water over what is termed the bar than 4 feet at low water spring tides, nor less than 14 at high water ordinary neaps. South-westerly winds, however, have a very great effect in increasing the depth of water between Ardmore Head and Cable Island, so as on some occasions to produce 20 feet on the bar, while those from the north-east have as great an influence in decreasing it.

The course from any position off Cable Island, to a corresponding position off the Hook Lighthouse, is East, and the distance is 12 leagues.

Ballycotton Islands lie W. by S.  $\frac{1}{2}$  S. 5 miles from Cable Island. Between them is a small rock which is dry at very low spring ebbs. Another small rock called the Smiths, bearing W. by S. dries at low spring ebbs. To avoid this rock on the south, keep half a mile from the shore; or keep Cable Island open without Ballycotton Islands. Poor Head is about 6 miles W. by N. of Ballycotton Islands, and about 4 miles N.W. by W. from Poor Head, is the entrance of Cork Harbour.

Lieutenant S. Colston, who has been stationed in the neighbourhood of Ballycotton for some years, recommends that vessels bound to Cork or to parts further westward, and obliged to bear up in a westerly gale, should take shelter in this bay instead of running for the dangerous bar harbour of Youghal, or of losing still more ground by going further to the eastward. Here they will be within 3 hours' communication by land with Cork, and ready for any favourable change of wind.

He adds that the bay affords good shelter with winds from S. to N.E.; the soundings are regular and gradual, and the bottom on the west side of the bay is a smooth fine sand upon yellow and brown good holding clay. The most convenient anchorage for shelter in a south-westerly gale is with the outer island bearing S.S.E., Kilmahon Church N.N.W., and the Coast Guard Station-house about S.S.W., in 3 or  $3\frac{1}{2}$  fathoms at low water, or further out according to the draught of the vessel.

The outer island is high and bold, with deep water close to, and no danger, so that a vessel from the westward may haul close round it, and suddenly get into smooth water.

The sound between the islands should not be attempted but under very urgent circumstances, and then the S.E. island must be kept close on board. Between the inner island and the main, the rocks dry at three-quarters ebb.

In case of a shift of wind to S.E. or E., which, however, very seldom blows, vessels should work out as quickly as possible.

Cork Harbour.—From the Land's End to the entrance of Cork Harbour is N. by W.  $\frac{1}{4}$  W. 46 leagues. In entering Cork from the southward, keep Knockmellown Hill about N.E. until you see the old head of Kinsale, a bluff point with a light-house on it. From this head, the entrance of Cork Harbour lies E. by N. about 4 leagues.

The entrance to Cork harbour lies between Roche Point Tower or Lighthouse to the eastward and Ringabella Creek to the westward. The harbour is very extensive, easy of access, and will afford shelter to vessels of any size, and in any number against all winds that blow; the ground to is good for holding, and the depths of water throughout vary from 4 to 14 fathoms. The anchorage in the harbour may properly be divided into inner and outer, the former being within the spit and the latter without, or to the southward of it. The first affords a secure station for the refit and equipment of vessels; the second is merely used as a temporary roadstead. The spit alluded to is a mixture of sand, shingle, and mud, stretching more than a mile from Haulbowline Island, with a certain degree of convexity in an easterly direction, parallel to the shore at Cove; and from the Old Fort, on this shore, a tongued shoal extends in a southerly direction, so that this part of the channel is justly called the Narrows.

From the entrance of Cork harbour to these Narrows, and through them up to the anchorage off the town of Cove, the fair-way is accurately marked by a double series of buoys, white on the western side of the channel and black or red on its eastern side.

Some alterations having taken place in the banks of this harbour since Captain White made his survey, it became necessary to change the position and colour of

some of the buoys; and this has been judiciously executed by Mr. Alves, the resident agent victualler, at Haulbowline Island, under the direction of the Lords Commissioners of the Admiralty, and with the sanction of the commissioners of the harbour. Captain White's directions and marks have, therefore, been so far altered as to apply to the present state of the banks and buoys.—Hydrog. Office.

The principal dangers to be apprehended in entering the harbour are, the Harbour Rock, and the Great and Little Turbot Banks, which lie directly in the fairway of the entrance; of these the Harbour Rock is the outermost. It bears from Roche Point N.N.W.  $\frac{1}{2}$  W., is distant four-tenths of a mile therefrom, and has only 14 feet upon it at low water spring tides. The long northern mark for this rock is, Mr. French's House at Cuskinney, (a white house, very remarkably situated among the trees to the eastward of Cove Town, and a little elevated above the water's edge, with a flag-staff in front of it,) touching the lowest point of the land at Dog Nose. On the eastern end of the Harbour Rock, a white buoy, with a red rim round the top, No. 1, is placed in 4 fathoms at low water, to which it has lately been removed from the centre of the rock. The marks for it are Cuskinney House appearing over the lowest point of the land at Dog Nose, and a Cottage near the shore on the eastern land, on with a Gateway on the hill behind it. There have lately been annexed two other cottages to the south end; the first thatched, the other of two stories and slated. On the western edge of the rock another buoy has been lately placed; it is painted red with a white rim, and is marked A; it lies N.W. by W.  $\frac{1}{2}$  W., a long cable's length from the eastern buoy.

One-third of a mile from the Harbour Rock in the direction of N. by E.  $\frac{1}{2}$  E. lies the Great Turbot Bank, which extends N. by W. about a quarter of a mile. The shoalest water is 9 feet on its eastern side, on other parts from 18 to 24 feet. The western marks for the middle of this bank are as follows: a dark-brown stone building, on the precipitous part of Kenly Cove Point, touching the land south-eastward of Temple-Breedy Church, or the white house in Ringabella Bay touching Kenly Cove Point. The buoy that lay on the centre of this bank has been removed to its eastern end in 4 fathoms. This buoy, No. 2, is white, with a black rim, and the marks for it are, the west end of Lower Harbour View on with the Flag-staff at Cuskinney; a gateway on the hill on the eastern land inside of the lighthouse over the north end of the clump of cottages, with the coast-guard garden behind them; and Carrig-Mahon House on the north side of Monkstown Hill on with Coolgreana Cottage, near Black Point, the cottage about twice its own apparent breadth open of the red cliff near Ringaskiddy. On the western side of this bank, a long cable's length from the buoy No. 2, a new buoy now watches in 4 fathoms: it is painted red, with a white rim, and is marked B.

The Little Turbot Bank lies about two cables' length due north, N.N.E.  $\frac{1}{2}$  E., from the Great Turbot. This bank advances in a south-easterly direction from Ram Point, under Camden Fort, with a depth of 23 feet; but close to the eastward of these two banks, as well as between them, there are 7, 8, and 9 fathoms water.

The first buoy, on the west side within the Turbot Banks, is Camden Buoy, No. 3, white, lying in 4 fathoms on the edge of the bank projecting from Camden Fort. Three other white buoys, all lying in 4 fathoms, mark the western side of the channel before arriving at the Lower Spit Buoy; namely, Crosshaven or Curlaan Buoy, No. 4, to the northward of the entrance to Crosshaven; Chapel Hole or Spike Buoy, No. 5, off the eastern end or spit of Spike Island; and the east Haulbowline Bank Buoy, No. 6, on the eastern extremity of the bank of that name.

The next is the Lower Spit Buoy, No. 8, quartered black and white on the top,

and alternate black and white rings on the side, lying in  $2\frac{1}{2}$  fathoms. Its marks are, the village of Crosshaven just shut in with the eastern end of Spike Island, and a large white house (Colonel Burke's) to the S.W. of Ballybrickan, just open of the N.W. point of Rocky Island.

About 160 fathoms to the north-eastward of that buoy, No. 8, on the extremity of a spit lately grown up, a new white buoy, No. 7, has been placed in 4 fathoms, with the following marks:—Ballybrickan House over the Mast-house on Haulbowline Island, being its own apparent breadth open of the South Victualling Store; and the N.E. angle of a very high narrow house by itself, at the east end of Lynch's Quay at Cove, (Atkinson's, the boat-builder,) just open of the western angle of Cove Church. Between these buoys, at 50 fathoms distance from the chequered buoy, No. 8, there are 22 feet at low water, and at a quarter of a cable outside of the white buoy there are  $4\frac{1}{2}$  fathoms.

At low water the spit is dry to a great extent, and steep to all along its northern edge, near which a white buoy, No. 9, called the Upper Spit Buoy, is placed, with 9 feet close outside of it, and 4 fathoms water at the distance of 34 fathoms.

On the eastern side of the harbour, an extensive rocky flat projects from Dog Nose, and from thence northerly and easterly round the peninsula of Cork Beg, being distant from the land in some places nearly half a mile. This shoal is distinguished by three black buoys along its western edge, in 4 fathoms, namely, the buoy off Dog Nose, No. 10, Cork Beg Buoy, No. 11, and White Gate Buoy, No. 12. The Black Rock, which has a beacon on it, rises from the bank a little to the westward of Cork Beg, but is so close to the shore as to be completely out of the way of navigation; it shows at half ebb. Aghada Church, kept open to the northward of Cork Beg, leads to the northward of it, and the land in the vicinity of Robert Head, wholly shut in with the land to the southward of Fort Camden, will lead very close to the westward of it.

The flat just described is met in an oblique direction by another from the northern shore, on the south-western edge of which, on a projecting point, lies what is called the N.E. Buoy, No. 13, black (formerly red,) in 4 fathoms. Its marks are, the north end of Ballybrickan House just touching the southern point of Coney Island, and the Flag-staff at Cuskinney on with the centre of the N.W. Windows of Kuskinnery House. The next is Kuskinnery Buoy, No. 14, a new black buoy, in 4 fathoms on the N. W. edge of the same flat. One quarter of a mile to the north-westward of the N.E. buoy is a red buoy, No. 15, on an old wreck, in 9 feet.

Between these two flats lies the Quarantine Ground (on which there is a black mooring buoy, No. 16) and the channel up to Rostellan. There are various narrow channels and swatches, in the muddy banks with which Cork harbour abounds, all of which are resorted to by lighters and other small craft, at proper periods of tide.

The capacity of the Ship Channel into Cove Harbour is very much straitened by the steep flats before described, no part thereof exceeding in breadth the distance between Forts Carlisle and Camden, from whence it winds circuitously between the buoys, narrowing at the same time as you proceed northerly, so that no one leading mark can be taken up and acted upon continuously from the harbour's mouth; though, by attention to the buoys and to the lead, a vessel may be worked in or out at any time. The best channel for large ships will be found to the eastward of the Harbour Rock and of the Turbot Bank, as at low-water spring tides

there is no continuous deep water to the westward of those shoals for any vessel drawing more than 23 feet.

When running for Cove, therefore, endeavour to pass between Roche Point and the buoy of the Harbour Rock, or between the latter and the buoy of the Great Turbot Bank: the first may easily be effected, by rounding the point within the distance of a quarter of a mile, or by keeping Mr. French's House at Cuskinney wholly shut in with the point at Dog Nose, which will also lead you to the eastward of the Great and Little Turbot Banks. Having arrived within or to the northward of these banks, which you will have effected when the round stone Tower, on the heights near Ringaskiddy, appears four times its own breadth open to the northward of the lowest part of the declining land under Fort Camden, steer for the middle of Spike Island, keeping as nearly midway as possible between Forts Carlisle and Camden, until two remarkable houses, situated somewhat inland to the northward of Mr. French's House at Cuskinney, and to the eastward of the Old Fort, denominated Upper and Lower Harbour View, appearing in the following position, viz., the northernmost house (Upper Harbour View) appearing between Mr. French's House and the southernmost house (Lower Harbour View,) three-fourths nearer to the latter than the former; both these houses are of a whitish colour, and roofed alike with blue slate; the upper one is also weather slated half-way down its front: (part of the weather slating has lately been removed.) This mark will lead up between the shoals towards Cove Town, and very close along the eastern bend of the Spit, near the chequered buoy, No. 8, though in not less than 4 fathoms at half tide. Continue running upon the leading mark just given, until two white-washed marks in the upper and lower walls of the old Fort or Hospital appear in one. This last mark will lead you round the chequered buoy, No. 8, and when Ballybrickan House begins to come into contact with the south-western angle of the buildings on Haulbowline Island, you should haul suddenly to the westward, steering N.W. by W. towards a large Storehouse on the upper Quay at Cove, for about 2 cables' length, and then W.N.W. parallel to the beach at Cove, until Roche Tower shuts in with the eastern end of Spike Island, which is the best mark for anchoring, and where you will find from 4 to 9 fathoms water.

Large vessels, particularly at low water, should pass to the eastward of the new white buoy, No. 7, and, after rounding it at a quarter of a cable's length distance, may haul suddenly round to the westward as before.

To pass between the Harbour Rock and the Turbot Bank, keep the white house in Ringabella Bay twice its own apparent breadth open to the southward of Kenley Cove Point. You may, however, anchor (as has already been stated) anywhere, in what is termed the Outer Road, between the buoy of the Spit and Fort Camden, either upon the above leading mark, or indeed in any other position, consulting only the proximity of the shoals.

Vessels beating into or out of Cork Harbour should know that the tide of flood sets, in the first instance, into the bight formed between Dog Nose and Roche Point, and thence obliquely across towards Crosshaven, where it is again warped into a north-easterly direction, which produces corresponding counter-tides and eddies along both shores. The tide of ebb has a directly opposite tendency. It is high water at the Cove of Cork on full and change days, 4h. 30m. and the tide rises and falls perpendicularly on great springs 15 feet; on ordinary neaps 8 and 9 feet. Roche Point as well as Dog Nose, are both bold, as is also the western shore, as far up as the Great Turbot Bank.

The above instructions will suffice for the navigation of the harbour, supposing the buoys to have been removed; but at present the ship channel is well defined, by the positions of the buoys on the shoals, the western limits of the channel, as already stated, being pointed out by white buoys, and the eastern limits thereof by black or red ones, none of which are in less than 4 fathoms, except the chequered buoy, No. 8, on the Lower Spit, and the white buoy No. 9, on the Upper Spit.

Crosshaven is a small creek or inlet, formed by Corabinnah Hill on the northern side, and the land on which Camben Fort stands to the southward. The channel thereinto is very narrow and circuitous, and for which no leading marks can be here given. It has from 8 to 13 feet water, and is the resort of coasters and other small vessels only, who frequent it at proper periods of tide.

To the southwestward of Roche Lighthouse lie the Stag Rocks, but they do not exceed the distance of a cable's length from the point and never wholly cover. The light in Roche Tower exhibits towards the sea a gloomy red appearance, but towards the harbour it is bright, and 92 feet above high water.

Daunts Rock lies 5 miles S.W. from the entrance to Cork Harbour, 1 mile S.S.W. from Cork Head, and three-quarters of a mile from the shore; is about half a cable's length long, and has 11 feet on it at low water spring tides. At this rock, Robert's Head bears N. by W., and Robert's Cove N. by E. To avoid it on the south side, keep Flat Head a ship's length without Barry's Head. To clear it on the east side, keep Cork Head N. by E.  $\frac{1}{2}$  E. To avoid it on the north side, keep Robert's Head N.N.W.; and to sail between it and the land, keep half a mile from the latter. The Old Head of Kinsale bears from Daunts Rock W. by S., distant 12 miles. A buoy is placed on it.

Barry Point, on which there is a signal tower, is 2 miles to the eastward of Oyster Haven; Flat Head 2 miles to the eastward of Barry Point; and Robert Head, on which there is also a signal tower, somewhat more than  $1\frac{1}{2}$  mile to the eastward of Flat Head.

Oyster Haven is about 9 miles from the entrance of Cork Harbour, and  $3\frac{1}{2}$  miles to the eastward of Kinsale; it is a small creek in which vessels will find good shelter in 9 feet low water. To enter, pass on either side of the Sovereign's Isles. A shoal extends off Keroda Point, nearly half a cable's length. The best part for anchorage is on the west side of that branch which runs to the westward.

There is a small inlet to the westward of Kinsale Harbour, and between it and the Old Head, named Sandy Cove, in which from 2 to 7 fathoms will be found. Its entrance, however, is much contracted, and only used by coasters and hookers.

The harbour of Kinsale, though narrow at its entrance and all the way up to the town of Scilly, is, nevertheless, very safe, and is capable of receiving vessels of any size. The entrance is formed by Hangman Point on the eastern and Money Point on the western side, and lies about 4 miles distant from the pitch of the Old Head of Kinsale, in the direction of N.E. After rounding the Bream Rock, which lies under the eastern side of the Old Head, with 7 fathoms close to it, steer for the harbour's mouth by keeping the whole of Charles Fort, which is an extensive castellated building considerably within the harbour's mouth, open to the westward of Hangman Point, and minding not to bring the said fort within its own apparent breadth of Money Point on the larboard hand; and, having reached well within the former point, keep as near mid-channel as possible and anchor until you obtain a pilot. Cove anchorage is the one generally resorted to, and it affords very good shelter even with the wind right in. It lies a little within or to the north-westward of Charles Fort, and about a cable length and a half from the shore.

There is, however, water enough for the largest ships close up to the town of Kinsale, the channel to which lies close along the eastern shore; but it is very narrow and circuitous, and renders the assistance of a pilot necessary. The wind between S.S.W. and E.S.E. is a free wind in and from W.N.W. to N.E. a fair one out.

There is a bar of coarse sand a little to the southward of Charles Fort, having only 10 feet on it at low water spring tides. You are within or to the northward of this bar when the body of Charles Fort bears E.S.E.  $\frac{1}{2}$  E., and drop thence almost immediately into deep water. The dangers in going into Kinsale Harbour are, Farmer Ledge on the larboard hand and Bulman Rock on the starboard. The former lies close to the western shore and dries at three-quarters ebb. The Bulman lies above two cables' length to the southward of Hangman Point and has only three feet on it at low water. By keeping Charles Fort wholly open (as above directed) to the westward of Hangman Point, you will pass considerably to the westward of the Bulman; and, by not bringing the said fort within its own apparent breadth of Money Point, you will avoid the ledge called the Farmer.

During the night there is a faint light kept on Charles Fort for the guidance of vessels bound into Kinsale. When running for the harbour, however, in a very dark night, some caution is necessary, as you have no other guide, save the counter-position of the latter light and the one on the Old Head, to lead you to the Narrows at the entrance of the harbour; and as the mouth thereof is not in a direct line between these two beacons, it is in that case very difficult for a stranger to hit. Under these circumstances I would recommend an offing until daylight, or till a pilot can be procured, unless pressed by circumstances. The water between the Old Head and the mouth of the harbour shoalens gradually from 20 to 7 fathoms; the latter depth is between the two points. By keeping the southernmost Sovereign Island twice its own apparent breadth open to the southward of Froward Point you will pass to the southward or without the Bulman; and the middle of the said island in one with Froward Point will carry you between the Bulman and the land. You may anchor anywhere under the Old Head without the harbour's mouth as long as you keep Charles Fort in sight to the eastward of Money Point, in from 7 to 14 fathoms water, where the ground is tolerably good, and where you will find shelter against the wind, when between west, and round northerly to N.N.E. Should the wind veer to the southward it will be fair for entering the harbour.

On the Old Head of Kinsale is a bright and steady light. About one mile south of the Old Head lies a rock extending N.N.W. and S.S.E., with from  $6\frac{1}{2}$  to 9 fathoms on it, called the Rock of the Race, on which, S.S.W. to S.E. gales cause the sea to break heavily. About 2 miles S.E. from the south part of the Old Head, and one mile E. by S. of the Rock of the Race is a sand bank of 200 fathoms in length, N.W. by N. and S.E. by S., having from 9 to 13 fathoms, on which the sea breaks high in southerly winds. Ships should keep at least 3 miles from the Head, to avoid the breakers which extend some distance further south than these shoals.

In Courtmacsherry Harbour small vessels may lie very safe near the quay in two fathoms. As the water is shoal off the point next the quay, vessels drawing 8 or 9 feet must have half flood to go in. About a quarter of a mile east of this place, in a small bight formed by a perpendicular clay cliff, a vessel may stop in  $1\frac{1}{2}$  or 2 fathoms water; but as the channel is narrow and the tide rapid, one anchor must lie on the shore. The channel, from the extremity of Courtmacsherry Point to these anchorages, is not above one cable's length from the shore.

Two rocks, called the Barrels, lie near the middle of Courtmacsherry Bay. The southernmost is small, and dries about low water; the other is larger, lies about half a mile to the northward of the former, and is very seldom seen above water. At the southernmost Barrel Rock the extremity of the Old Head of Kinsale bears S.E. by E., and the Horse Rock, a rock always above the water, W. To avoid the Barrel Rocks on the west side, keep within a mile and a half of the shore on the west side of the bay. The water within a ship's length of the Horse Rock is deep all around. Vessels may anchor with westerly winds on the west side of Courtmacsherry Bay, with either of the Officers' Houses S.W. of the Horse Rock, in 10 or 12 fathoms, or on the north side of the rock, in 4 or 5 fathoms.

Clonekilty Harbour is fit for small vessels only; and going in or out, when the wind is southerly, is very dangerous. There are but 2 feet on the bar at low spring tides, and none ought to run for the harbour in blowing weather, unless under great necessity, and with three quarters flood. The entrance is on the east side of the island, and the channel lies near the main. On the north side of the Point of Ring is a rock, which extends to the edge of the channel. You should anchor near the main, opposite the east end of the island, in the bight next above the narrow, or on the north side of the island. The other channel, along Muckarris, is only fit for boats. In the middle of Clonekilty Bay, about a mile southward of Ring Point, a vessel may stop, with the wind off shore, in 10 or 12 fathoms. A small quay is built at Ring.

About 8 miles from Ragged Island, in the direction of E.  $\frac{1}{2}$  S., is situated Galley Head; half a mile from which, in the direction of W., lies the Duly Rock, which appears at half ebb. There are 16 fathoms in the stream of this rock westward, 15 fathoms close to its southern extremity, and a good though narrow channel between it and Galley Head for small vessels. Between Galley Head and that of Kinsale are the Seven Heads, on which a square signal tower is erected.

Ross Harbour is a small creek in which small vessels may lie in moderate weather, the entrance dries at low water, and is rough and dangerous at high water, when the wind blows on the shore. At high water there are 10 feet water on the bar, and 8 feet with neaps. In moderate weather, and the wind off shore, vessels may anchor on the west side of Dundedy Head, between it and Ross Harbour, and also several miles to the westward of Ross, on clean ground, about half a mile from the shore.

Glendore Harbour lies 4 miles to the westward of Ross Harbour, &c. About a mile to the northward of the harbour's mouth, and nearly in the middle of the channel, are four small rocks called the Dangers. The southernmost of them is dry at half ebb, and the northernmost appears at four hours' ebb. On each side of these rocks is a channel sufficiently deep for large ships; that on the west side is reckoned the best, because there is a mark to lead through it. To go into Glendore, on the west side of the Dangers, keep the east extremity of the little island, which is next to them, on with the west extremity of Adam's Isle. These points kept a very little open of each other, will lead you to the northernmost of the Dangers. In proceeding along the east side of these rocks, keep about half a cable's length off the shore. Near the head of this harbour, vessels may lie very safely off Ballincalla; although there are but 4 or 5 feet there at low water spring tides, soft ooze prevents their receiving damage. About high water neap tides, ships of 12 feet water may run up a cable's length or two above the house of Ballincalla, and lie there safely on soft mud. Stone beacons have lately been built on the Dangers.

Castlehaven Harbour is a harbour for vessels drawing not more than 10 feet



water, which must lie about a quarter of a mile above Reen Head, with the Stags of Castlehaven in sight, between Horse Island and the main, or with the tower upon Horse Island on with Reen Head. When the wind does not blow hard from the S. or S.E., vessels may ride in the bay, off the town of Castlehaven, in 4 or 5 fathoms. Between Adam's Isle and Shillenragga Head, is a sunken rock, on which are 12 feet at low water spring tides. The rock lies nearer the island than the head. To avoid it, keep one-third of the distance between the head and the island from the head; or one-fourth of that distance from the island. Carrickanarim Rock lies between Ragged Island and Squince Island, but nearer to the latter. It is covered except at very low spring ebbs. To avoid this rock on the south side, keep the westernmost of the Black Rocks, which lie about half a mile W.N.W. from Ragged Island, on with Toe Head. About a cable's length W.S.W. from the westernmost Black Rock lies a small rock, which is dry at about half ebb.

The Stag Rocks lie W. 11 miles from Dundedy Head; 5 miles W. by S.  $\frac{1}{2}$  S. from Ragged Island; 4 miles S.W.  $\frac{1}{2}$  W. from the entrance of Castlehaven Harbour; 4 miles S.E. by E.  $\frac{1}{4}$  E. from Kedge Island; and 10 miles E. by S.  $\frac{1}{4}$  S. from the south-west part of Cape Clear Island. Ships may anchor in the bay on the east side of Toe Head, or in the bay on the west side of Toe Head, or in Barlog Bay, about half a mile from the shore.

Between Kedge Island and Toe Head there is an inlet of the sea, called Barlog Bay, which winds curiously into the interior, forming as it were a complete lake, and possessing very deep water; in the outer part of it fishing-boats may occasionally find shelter in 5 feet water, but there is no passage even for boats to the lake within. On an Island in the centre of this lake stands an old Castle.

Baltimore Harbour lies about 6 miles E. by N. from the south-west part of Cape Clear Island, and is convenient for ships bound either eastward or westward. Small vessels may ride two or three cables' length to the N.W. of Baltimore town, in 10 or 11 feet at low water, quite sheltered from all winds. Large ships must lie off the old castle on Sherkin Island, in 3 or 4 fathoms, where the harbour's mouth is open.

The rocks in this harbour are the Loo and the Perch. The Loo lies about half a cable's length N.W. from the high cliff with the turret on the east side. It is dry at 4 hours' ebb, and may be avoided by keeping in mid-channel. The Perch appears at half ebb, lies nearly N.N.E. from the turret on the cliff, and is known by a perch which is kept on it. This rock has shoal water on every side, half a cable's length from the perch.

Two small ledges of sunken rocks also on the western side under Skerkin Island, one a little to the south-eastward of Fort Point, the other a little to the north-eastward; but they do not advance sufficiently from the land to interfere with vessels navigating in the fair-way.

There are other ledges of rocks in different parts of this harbour, but their contiguity to the land, or distance from the anchoring ground, renders a description of them unnecessary. When intending to enter the harbour of Baltimore, and for which you must have a leading wind, so as to enable you to fetch the anchorage without tacking, steer boldly in N.N.E.  $\frac{1}{4}$  E. without being discouraged by the threatening aspect of the cliffs on both sides, keeping one-third of the whole distance across nearer to the western than to the eastern point, until the ruined Abbey which stands in a small bight on Skerkin Island bears W.N.W. by W.  $\frac{1}{2}$  W.; then anchor in as nearly mid-channel as circumstances will permit. By keeping one-third nearer to the western than to the eastern land you pass to the westward

of the Loo; and when Baltimore new Church appears in sight over the sandy beach, on the starboard hand going in, you will be considerably to the northward of, or within, that rock. There is always a ground-swell in this harbour when the wind prevails between W. by N. and S.E., which increases very considerably in boisterous weather. The winds from the southward of east or west will prove leading-winds in, and those which blow from the northward of east or west fair out.

In the entrance of Baltimore harbour are from 12 to 19 fathoms; between it and Cape Clear are from 18 to 34 fathoms, clean sandy ground, and about 2 leagues from the land are 50 fathoms.

The greatest rise and fall of the tide after a series of moderate weather is 13 feet. The flood sets right in through the entrance, and the ebb as directly out. It is high water full and change at 4h. 10m. The watering-place is at Baltimore town.

In the event of a vessel being driven in between the Stag Rocks and Cape Clear in a gale of wind from the southward, which always produces a heavy sea, the knowledge of Baltimore harbour becomes of the very first importance, as no stranger can attempt the passage of Gaskinaan Sound with any prospect of success, under such circumstances, unless during daylight. This dangerous passage lies between Cape Clear Island and Sherkin Island, and derives its name from the two rocks which are placed nearly in the vortex thereof,—namely, Great and Little Gaskinaan. The former lies nearly two-thirds of the breadth across, nearer to Cape Clear Island than to Sherkin; it is always very high above the water, and appears somewhat scattered and disunited. The latter lies between the one just described and Cape Clear Island, and at five hours flood shows but one head, then awash; its base is, however, very extensive, and it nearly unites with Great Gaskinaan. There are, therefore, two channels through this sound, one on each side of the Gaskinaan rocks. The eastern one is the best and safest, the water being deepest, the set of the tide more regular, and you have only to keep in mid-channel. For the safe navigation of the western channel, you must borrow within 80 or 90 fathoms of the rocky shore of Cape Clear, where, however, you will be subjected to more sets of tide than one. There is no safe passage between the Gaskinaan rocks for any but very small handy vessels. In order that the position of the Great Gaskinaan Rock may not be mistaken, let it be remembered that the long north-western mark for the centre of the rock is Leamcon Tower, which stands upon a hill to the westward of Mount Gabriel, exactly over the eastern end of the Westernmost Calf.

There are from 12 to 26 fathoms water throughout the eastern passage of Gaskinaan.

Long Island Harbour is well sheltered, of easy access, and capable of receiving large ships, which may enter at either end of the island, and anchor any where in good ground.

There are no less than five different avenues to the anchorage: one from the south-westward between Goat Island and the Black Rock, one between Goat Island and Long Island, one between Long Island and Three-Castle Island, and two other passages between the Black Rock and Leamcon Castle.

The three first-mentioned entrances are those most free from danger, and may be resorted to confidently without a pilot, though there is water sufficient in the others also for a line-of-battle ship. When entering by the south-west passage, you have merely to keep in mid-channel, and preserve that precaution all the way through, as well as from thence to the anchorage.

In the passage between Goat Island and Long Island, it is necessary to keep one-third nearer to the former than to the latter, until you pass the rocky ledge which runs out in a north-westerly direction from Long Island, and of which you will be to the northward when Coghlan's Tower at Crookhaven appears in one with the northern side of the high wedge-shaped rocks, called the Green Islands; you must then as before preserve the mid-channel, until you reach the anchorage.

Coming from the westward or south-westward, and intending to enter the Sound by the south-eastern passage, range along the southern side of Long Island, giving the shore a berth of a quarter of a mile, or rather more; by keeping thus near to the latter island you will avoid a dangerous rocky ledge which projects in a south-western direction from Three-Castle Island, extending thence nearly one-third of the channel across, and on which there are only 12 feet at low water; the long southern mark for this shoal is, the south-western end of the Western Calf in one with the south-western extremity of Cape Clear Island. Having rounded the eastern point of Long Island, you must, if in a large vessel, anchor as soon as Cape Clear Lighthouse comes in one with the said point, taking care also not to shut in the Tower on Brow Head with the southern sides of Gun Point and Coney Island, in order to avoid a spit of sand which projects north-easterly from Long Island, and which, partially drying, divides the eastern from the western anchorage, and also to avoid a rock which lies in the mouth of Scull Harbour. There is a communication from one to the other anchorage at all periods of tide, to the northward of the above spit, and though somewhat narrow, yet the water in the fair-way is deep, varying from 3 to 7 fathoms. The mark to avoid the northern extremity of this spit, and to preserve the deepest water, is, Brow Signal-tower in one with Gun Point and with the southern extremity of Coney Island; and the long western mark for the northern projection thereof is, Brow Tower in one with the highest of the rocks called the Green Islands. The best position for mooring, in what is termed the western anchorage, is one-eighth of a mile to the eastward of Coney Island, and as near mid-channel as circumstances will admit: and the most favourable position for mooring in the eastern anchorage, is, with Cape Clear Lighthouse in one with the eastern end of Long Island, and in mid-channel also. The greatest vertical rise and fall of water in Long Island Sound, after a series of moderate weather, is 12 feet, and it is high water, full and change, at 4 o'clock.

About half a mile from the Black Rock, in the direction of W.  $\frac{1}{2}$  N., lies a very dangerous sunken rock, on which there are only 10 feet water; the marks for which are, Leamcon High Tower (not the castle) in one with the western end of the Green Islands, and the chasm in Goat Island rather open to the southward of the Black Rock. In boisterous weather the sea breaks tremendously upon this rock as well as on the rocky heads in its vicinity. By keeping the Mizzen Peak in one with Alderman Head, or by keeping Three-Castle Island in sight to the southward of Goat Island, you will pass considerably to the southward of it.

The eastern anchorage above alluded to may be frequented by frigates, in limited numbers, either to obtain supplies or as a refuge in bad weather; from hence, also, vessels may put to sea with easterly winds, at a proper time of tide, which they cannot do from Crookhaven.

Skull Harbour is pretty well well sheltered, the ground good, and the water in the anchorage from 2 to  $3\frac{1}{2}$  fathoms. There is only one rock to be avoided, which lies in the middle of the entry, and is dry at two hours ebb.

There are several other places among the islands near Cape Clear, into which vessels may run, and find safe anchoring in times of distress.

The land in the vicinity of Cape Clear is high, precipitous, and bold. The Light-house on Cape Clear Island is in  $51^{\circ} 24' 56''$  north latitude, and in  $9^{\circ} 29' 8''$  west longitude. It is 455 feet above the level of the sea, and may be seen in clear weather 8 leagues. The light therein revolves as at Scilly. There are two small Coves in the Island, one on the south-eastern side, and the other on the north-western side, denominated North and South Harbour, but neither of them afford permanent shelter or common convenience to vessels larger than the Irish Hookers, though they may be, and indeed have been, made useful to others in cases of great emergency. The south-eastern Cove is the most extensive as well as deepest; but in boisterous weather, from any quarter to the westward of N.W., or eastward of N.E., the reflux of the sea is so powerful as to draw vessels from both, occasionally to sea, however well secured they may be. In order to fall in with the Cape, when coming from the offing, keep Hungary Hill N. by W., or Mount Gabriel, N. by E.

The western shore of Cape Clear Island is not so bold as that to the eastward, and should not be approached nearer than half a mile, particularly the north-western point. Between Cape Clear, and the islands denominated the Calves, are also ledges of dangerous rocks, though they lie much nearer to the latter than the former. No part of the coast, to the eastward of the western Calf, should be attempted without a pilot.

Between Cape Clear and the Shannon the land increases in height as you proceed to the northward; but this part of the coast is seldom wholly free from fog and haze during the summer months, and is generally annoyed by powerful gales and a turbulent sea during the winter season. There are, however, many well-sheltered harbours and roadsteads westward of Cape Clear, the access to which is easy. The land has a very broken irregular appearance.

The Fasnett lies nearly W.  $\frac{1}{2}$  S. from Cape Clear, distant about 5 miles, and rises 98 feet above the level of the sea. The bottom westward, southward, and north-eastward of the Fasnet is both shoal and rocky, particularly to the north-eastward: in this latter direction there is a flat rock at the distance of a quarter of a mile from the Fasnet, having only 9 feet at low water; the long eastern mark for it is Baltimore Tower appearing in one with the highest part of the Black Rock, which forms the south-western end of Cape Clear Island. When navigating, therefore, in the vicinity of the Fasnet, do not approach nearer than one mile. The Mizen Peak in one with Brow Signal-tower, leads through midway nearly between the Fasnet and the Cape. The Peak, if kept open to the westward of Brow Head, will lead you about half a mile to the south-westward of the Fasnet. These two latter marks are given here in the event of partial fog, to which this part of the coast is very much subject.

Cape Clear bears to the north point of the Scilly Island S.S.E.  $\frac{1}{2}$  E., 150 miles. To Lundy Island S.E. by E.  $\frac{1}{4}$  E. 183 miles, and the Smalls lighthouse E.S.E.  $\frac{1}{4}$  E. 147 miles.

When coming in from sea towards the land, neither Long Island nor Goat Island can, in the first instance, be clearly discerned, owing to their proximity to the main land, with which, indeed, they appear to be identified. The Fasnet Rock, however, if kept S.S.W.  $\frac{1}{2}$  W., or Leamcon high Tower, if kept N.N.E.  $\frac{1}{2}$  E., will lead you directly to Goat Island, and as you proceed will open the passages eastward and westward thereof. Mount Gabriel in one with Leamcon Tower and Castle, bearing E.N.E.  $\frac{1}{4}$  E., will open the western avenues; and the south-western end of Cape Clear kept just open of the south-western end of the western

Calf Island, bearing S.W. by S., will lead you to the south-eastern passage between Long Island and Three-Castle Island.

Mizen Head lies about 12 miles N.W. by W. from Cape Clear, and the Castle Head 2 miles N. by E. from Mizen Head. This head is remarkable from having a castle in it with three towers. Sheep's Head lies N.N.E. 4 miles from Castle Head. The two last heads form the entrance to Dunmanus Bay.

When running in from the offing for Crookhaven, the opening to which cannot be made out till very near the Alderman Head, steer in from the Fasnet, north, keeping the latter rock due south as near as may be, until Mizen Peak comes in one with the Alderman Head. In doing this you cannot be deceived, because at the same time, or nearly so, Mount Gabriel will appear in one with Leamcon signal-tower and castle to the north-eastward, and the Brow Head (on which there is also a signal-tower) will appear to close in with the Alderman Head to the westward. The harbour will now begin to unfold itself; the Revenue Officers' Houses on the northern shore will first be seen, and ultimately Coghlan's white look-out tower on the southern side.

Crookhaven is a very convenient place for vessels drawing 14 feet water, during bad weather or easterly gales, against which it affords the most ample shelter. A lighthouse has lately been erected on the north side of the entrance, 67 feet above the level of high water, having a fixed light.

Vessels drawing upwards of 12 feet cannot, during a great spring tide, bring Coghlan's tower more southerly than S.S.W. by compass, without touching at low water; in fine weather, however, no inconvenience will arise from suing.

When you have fairly opened the harbour, run right in, keeping directly in mid-channel. The signal-tower on Brow Head, three times its own apparent breadth open to the northward of O'Driscoll's House (a remarkable white house on the eastern part of the peninsula, and standing entirely by itself), west, will lead you to the northward of the Alderman Rock, and is also the mark for the fair-way of the entrance.

The Alderman Rock lies off the head which bears that name, and is consequently on the southern side of the entrance. Two distinct heads of this rock are always above the water, and of some considerable extent.

The bottom in Crookhaven is dark-blue mud, remarkably soft as well as deep, and there is no danger whatever therein, excepting one solitary rock which lies off Granny Island, which shows at low-water great spring tides. The long eastern mark for this rock is Leamcon Tower, just open to the southward of the bluff point of Rock Island. Vessels, therefore, of any burthen, in the event of loss of anchors, or otherwise in distress, may boldly run quite up the haven until they take the ground, provided they keep in the middle of the channel. Pilots are always ready, and will come off in any weather when signaled.

You cannot, however, enter Crookhaven unless the wind is to the southward and eastward of S.S.W. by compass, or to the eastward and northward of N. by W.; but when the wind happens to be foul for Crookhaven, it will prove fair for Long Island Sound. You may anchor with westerly and northerly winds, one mile north-eastward of the Alderman Rock, in very good ground; but great circumspection must be used in providing against southerly winds.

The space between the Alderman Head and Mizen Head is generally steep-to, having from fifteen to twenty fathoms, within one quarter of a mile; there are, however, some sunken rocks to the westward of Brow Head, as well as to the south-eastward of Mizen Head; by keeping Leamcon Tower in one with, or open

of the Alderman Head, until Three-Castle Point appears open to the westward of Mizen Head, you will pass very considerably without them.

There is a small inlet between Mizen Head and Brow Head, and which is separated from Crookhaven by a narrow isthmus of sand, called Barley Cove. On several occasions this bight has been mistaken by foreigners for a good harbour, and which it appears to be when viewed from the offing. There is, however, no safety in it, even temporary, with any wind, particularly from the westward, though it may help to preserve lives on an emergency. There is a rock directly in the centre of it which shews occasionally, as well as some others in its vicinity, but the western shore close under the Mizen land is pretty clear.

About half a mile from Three-Castle Head, in the direction of W.  $\frac{1}{2}$  S., lies a sunken rock, with only 20 feet water over it at low-water great spring tides: here the sea in boisterous weather breaks very heavily. By keeping Hungry Hill ever so little open to the westward of the pitch of Sheep's Head, you will pass considerably to the westward of it; and by opening out Bird Island, a huge rock so called in Dunmanus Bay, three times its own apparent breadth northward of Three-Castle Head, you will pass close to the northward of it. The south side of Bird Island, touching Three-Castle Head, is the mark for the centre of the rock. There are several other rocky heads between this breaker and the land, with different depths of water over them; it is not safe, therefore, to pass between either. Three-Castle Head is  $2\frac{1}{2}$  miles to the northward of Mizen Head, and is rendered remarkable by the old castellated building which stands on its summit.

The soundings, on a supposed radius of five leagues and a half from Mizen Head, in any direction between N.W. by W.  $\frac{1}{2}$  W. and S.S.W.  $\frac{1}{2}$  W., do not materially differ, either as to depth or quality of ground. The former varies only from 60 to 62 fathoms, and is principally of an oazy nature. Nearer to Mizen and Brow Heads the ground partakes of more variation in quality as well as in depth; and there are several sunken rocks and elevated patches of rough ground in their vicinity, the principle of which are Mizen Rock, and the patch called Sheehys Rocks: there are 27 fathoms upon each of these rocks, and 40 fathoms all round and between them; they are consequently not dangerous, otherwise than by the ebullition they occasion in bad weather.

When running in from the Western Ocean, for the purpose of rounding Cape Clear, the quality of the ground is of much greater consequence than that of the depth, for so long as the ingredients brought up by the lead remain free from oazy matter, you cannot be nearer than 6 leagues to any part of the Irish coast between the Skelligs and Brow Head, let the depth be what it may; but you may be considerably farther from it. On the other hand, if oazy ground be obtained in any depth of water between 62 and 92 fathoms, you may be sure that you are within that distance, and consequently to the northward of the latitude of  $51^{\circ} 10' N.$ ; for, were you to the southward of that parallel, the ground between those limited depths would be totally free from oaze, until you had advanced as far eastward as the meridian of Cape Clear. This fact will prove of great importance to vessels navigating here in thick weather, or when striving for an offing to the westward, with scant south-westerly winds.

When sailing eastward on the parallel of  $51^{\circ} 10'$ , or to the southward of it, if the soundings have decreased to 60 fathoms (no matter as to the quality of the ground,) you may with equal confidence conclude, that you are upon, or to the eastward of the meridian of, Brow Head, viz.  $9^{\circ} 46' W.$ , and may shape a course along the Irish coast, if necessary, E.  $\frac{1}{4}$  S. This course will carry you 4 leagues at

least to the southward of the Fasnet Rock, and nearly the same distance without all the headlands as far eastward as the Hook Light-house; such is the regularity in the direction of the Irish coast between those limits.

The centre of Hurd Bank lies in latitude  $51^{\circ} 13' N.$ , and longitude  $10^{\circ} 37' W.$  It extends in an E.N.E. and W.S.W. direction, and is 7 miles where broadest, which is at its eastern end: Mount Gabriel just appearing to the westward of Mizen Peak, and the Bull Rock in one with the eastern side of the westernmost Hog Island, are the marks for the middle of the bank, on all parts whereof are from 83 to 86 fathoms water, and from 90 to 100 all round it.

Dunmanus Bay, which is 4 miles wide at the entrance, has deep water and good ground nearly as far up as Manin Island, but being exposed to westerly winds is not much frequented, except by small vessels, that can ride in Dunmanus Creek or above Manin Island. At Manin Island anchor E. by S. from the Island about a cable's length, in 9 feet low water soft mud. In the creek anchor nearest the west side in 3 or 4 fathoms. In moderate weather, large ships may ride on good ground any where above Carberry Island.

About a quarter of a mile W.N.W. from the N.W. point of Carberry Island, is a rocky shoal with 8 feet water, very narrow from north to south, and which may generally be discovered by the swell of the sea, which breaks heavily in strong west winds. The top of Casilian Hill on with the north-west point of Carberry Island will lead to the northward of it. Another shoal stretches from the small island to the eastward of Carberry, about half way over, with only 5 or 6 feet water on it. On the north side of Four-mile-water Creek is Carrignarontee Rock, dry at low water. Between Furze Island and Horse Island is a rocky ledge extending almost half way over, and is covered only an hour before high water. Sugaih is a rock about a cable's length from the shore, below Dunkelly Houses, with only 6 feet water low spring tides. In entering is a small shoal about half a mile from Castle with  $3\frac{1}{2}$  fathoms on it.

Bantry Bay, to the northward of Dunmanus Bay, is large, safe, and commodious for vessels of all sizes, is  $3\frac{1}{2}$  miles wide from Sheep's Head, to the south part of Bear Island. There is very little tide, and the water deep almost to the shores, with no rock or shoals in the way but what may with ease be avoided even in the night time; ships may stop any where in the middle of the bay, on good ground, and in most parts near the sides.

Two good anchorages lie at the bottom of the bay; the south one is to the northward of Bantry town and within Whiddy Island, the western entrance, though very narrow, is steep-to on both sides. In the narrowest part are from 3 to 4 fathoms, and further in from 5 to 6 fathoms; on the east side of Whiddy Island are five small islands, the best anchorage is to the northward of the four southern ones in 5 or 6 fathoms, quite land-locked and secure from all winds.

Glengarif Harbour is on the north side opposite to Whiddy Island. It is small and with narrow entrance. Without the harbour is an island, on the east side is the passage in; which abreast of the island is half a mile wide, and has 6 fathoms. To go in, keep the east shore to avoid some rocks which lie off the island. When past the island anchor opposite the town in 3 to 5 fathoms. The place being small and the ground indifferent is seldom used but by small vessels; but during summer the largest ship may anchor outside the island, in 7 or 8 fathoms. good holding ground.

Bear Haven is an excellent harbour, large, well sheltered, and good ground; with the water deep enough for the largest ships. It has two entrances, one from the

west, the other from the east. The west entrance is best for vessels from the west or southward, but the other safer for strangers. You may anchor on the north side of the island, in from 5 to 11 fathoms; off Ballinakilly is the best place. Ships waiting a wind find the west end most convenient. In the west entrance are two rocks, one on the south side of the entrance always under water, within a cable's length of the shore, a little past the narrowest part of the entrance, and has 6 feet water on it at low water; the other on the north side off Dunbui Bay, dry at low water; this is called the Colt Rock; it lies about one-third of the channel from Dunbui, and two-thirds from Bear Island, and bears from Dunbui House E.S.E.  $\frac{1}{4}$  E. To go clear to the southward of it, keep the Turret House on with Brandy Hill, or steer in mid-channel, and you will clear the rocks on both sides. Between them are 12 fathoms.

There is also a bed of sunken rocks, lying nearly in the fair-way of the passage, to the southward of the Colt, and stretching off from the western shore about two cables' length, with from 10 to 15 feet water over them at low water; the mark for which is the Pyramid on Hungary Hill nearly in one with the Fort which stands on the north-west end of Bear Island. In order to avoid all these rocks, steer as nearly in mid channel as possible (for there are no two objects capable of being made an uninterrupted leading mark), borrowing somewhat nearer to Bear Island as you close with the latter rocks, and again recovering the mid channel course as soon after passing them.

Going in at the east end of the island, Carnamady Rocks are the greatest danger. The easternmost of them lies about half a mile S.E. from the east point of the island, and is never quite covered but at high water spring tides. These rocks are avoided by keeping in the middle, or rather nearer to the little island Roanharrick than to the point of Bear Island. Duncalla Rock lies nearly a mile E. by S. from Roanharrick Island, and is dry about low water. To avoid this rock on the south side, keep the point of Rimore on with the sharpest topped distant hill, eastward of the head of the bay. About half a mile to the northward of Roanharrick Island is a rock always above water, from the south side of which a ledge extends southward about one-third over towards the island. Part of this ledge is dry at low water. The northern shore is steep-to, and the best way for strangers is to go to the eastward of all the rocks, and proceed in between the little island Roanharrick and the main. There is a passage of 18 fathoms between the third and fourth rocks from the island, which are steep. To the westward of these rocks, the channel is clear on both sides, and you may anchor on good ground, in from 5 to 9 fathoms.

The Lecq is a single rock, lies 8 miles to the south-westward of Dursey Tower, and 22 to the westward of Mizen Head. It has 40 fathoms on its shoalest part, and 65 all round it. The marks for the centre of the rock are, the western declivity of the Little Hog Island exactly in one with the western slope of the Bull Rock, and Hungry Hill Pyramid a little open to the northward of the Tower erected upon Black-ball Head.

The Calf Rock lies N.W.  $\frac{1}{4}$  N. from Mizen Head, 15 miles N.W. by W. from Sheep's Head, and 3 miles W. by N. from the Cat Rock, off Crow Head. The Bull, Cow, and Calf are three islands, always above water, near the west side of Dursey Island, with 37 fathoms water close to them. There is also some rocky ground, but not dangerous, called the Grelogh Rocks, which bear W.N.W. from Sheep's Head, distant 12 miles, about 5 miles S.E.  $\frac{1}{4}$  E. from the Calf Rock, and 4 miles S.S.W. from Crow Head.



Ballydonaghan Bay lies between Dursey Island and Cod Head, is clear of danger, with from 20 to 30 fathoms close to the shore. Quoylach Bay lies between Cod's Head and Goge's Point, and is not much used from the number of rocks in it. On the north side a vessel may anchor in 16 or 18 fathoms, about  $2\frac{1}{2}$  cables' length from Innis Fernard Island. A rock lies about 2 cables' length westward of the island, and a small shoal about half a cable's length W. by N. with  $2\frac{1}{2}$  fathoms on it, the west end of Dursey Island being a ship's length open of Cod's Head. Within the island is a small quay on the south side.

Kenmare River should rather be called an arm of the sea; in it is deep water, with good holding ground in almost all parts of it that are above a quarter of a mile from the land; small vessels may sail up to the quay at Kenmare Town at high water. The greatest danger is the Maiden Rock off Rossmore Island, with but 6 feet water; to clear it, keep within one-third of either side of the river: also the Roanharick Rocks, which lie about a mile to the westward of Repinacosh Islands, the eastern and westernmost are always above water; but a small rock lies a cable's length S.W. from the highest of the western rocks, which dries at half ebb. The best harbours in Kenmare River are Ardgroom, Kilmechaloga, and Sneem.

Ardgroom lies on the south side, and admits vessels drawing 13 feet water. In going in, keep the west side of Carrickavenheen Rock, which is always above water, and crosses near the east end of a rocky shoal, which goes quite across the entrance, and dries at the west end half a cable's length from low water mark. Anchor in the creek on the west side in 4 or 5 fathoms; vessels drawing 10 feet should wait for half flood to go in; a shoal lies on the east side of Carrickavenheen with but 12 feet water on it.

Kilmechaloga is fit for large vessels and well sheltered. In bad weather small vessels will take a small creek on the east side of the harbour, and anchor in two fathoms. On the east side lies a rocky shoal, which extends W.N.W. above one-third over from the grassy cliff; on its west side are 6 feet, and on the middle only 4 feet. To clear it, keep Dutch Island on the east top of Drume Hill, on this hill are three sharp-topped hummocks. Anchor on the west side of Dutch Island, in 5 or 6 fathoms.

Sneem Harbour lies on the north side of Kenmare River, but the entrance is so bad as to admit of nothing but boats; the only safe part of the bay is that which is sheltered on the south side by the east point of Gannish Island, this part has good holding ground, and the depth of water is fit for large ships; but unless the wind be westerly, you cannot ride with more than half a cable without being in shoal water. The middle of the harbour being much exposed, and being foul in several parts, it is not safe to continue long in it.

Ballinskelligs Bay lies about 15 miles N.E. by N. from the Bull Rock, Hog's Head and Bolus Head forming the entrance; being quite exposed to south-west winds is very little frequented. In the summer time, a ship may stop on the north side, a little more than a cable's length N.E. by N. from the east point of Ballinskelligs Island, in  $4\frac{1}{2}$  or 5 fathoms. About  $2\frac{1}{2}$  miles S.W. from Hog's Head, lie the Hog and Scariff Islands; there are from 28 to 30 fathoms close to them; to the eastward of them are several smaller ones, but a particular description is not necessary.

The Great Skellig, a lofty rock, lies 16 miles north of the Bull Rock; from Bolus Head, W.N.W., 8 miles; and from Bray Head, W.S.W.,  $7\frac{1}{2}$  miles. Two lighthouses are erected on the south side, 650 feet distant from each other, bear

from each other N. by E. and S. by W., and are so placed as to answer for leading lights for vessels sailing north or south; as, by keeping the lights open a hand-spike's length from each other, they will give the Foze Rock a berth of 5 miles and the Bull Rock a berth of 3 miles. These lights are both steady, the upper one 370 feet above the level of the sea, the lower 173 feet.

Between the Great Skellig and the main lies the Little Skellig, a lofty rock. The Lemon Rock lies N.W.  $\frac{1}{2}$  N., distant 4 miles from Bolus Head. The principal rock is always above water, two others dry near it at half ebb, but have 30 fathoms close to them on the north side.

Valentia Harbour is a good harbour, being well sheltered, plenty of water, and of easy access. It has two entrances; the western is on the south side of Bray Head, and has no unseen danger as far up as Port Magee: the chief entrance is between Valentia and Beginnis Isles. To enter Valentia bring the channel S.  $\frac{1}{2}$  E. by compass midway between Beginnis Island and the buildings of Cromwell's Fort, and when in the entrance, shutting the two north-west points of Beginnis E.N.E., take care to avoid the Passage Rock, which lies 100 yards west of Beginnis Island, and has only 4 feet water on it; by opening the south point of Beginnis and the east end of Valentia, where there is a village, when the old chimney is W. by S. and opening out of the land west of it, you are clear of the rocks. Stand then along the Beginnis side to avoid the Harbour Rock, which dries at half ebb, and which has a perch on it; with the west end of Beginnis shut on Douglas Head you are to the east of this rock; with the south end of Beginnis E.S.E. on the peak of Bennetee Mountain, you are to the north of it; and when the same point opens the village of Cahirciveen E. by S. you are past it. There is good anchorage all the way up to the ferry, in from 4 to 7 fathoms, and for about a mile to the west of it in 3 and 4 fathoms. A spit of gravel runs off the port of Valentia, to avoid which keep the eastern side.

The opening to the north of Beginnis Island, called Lough Kay, has deep water, but exposed to a great swell; you may pass to the eastward of the islet called Church Island, into Cahir river. Keep the bluff of the Black Rock well shut in on Douglas Head to avoid a small rock in the passage. From Renard Point on Beginnis Island a shoal of sand extends with only 2 feet water on it.

The channel along the south side of Valentia Island has 9 feet at low water, and no danger until near Port Magee, when a spit of sand runs off the south shore, and north of its extremity a rock which dries at low water.

Dingle Bay lies nearly E. and W., with steep shores on each side. In moderate weather vessels may anchor almost in any part above a mile from the shore on clean ground. About half a mile to the eastward of Kaynglass Point, on the south side of the bay, lies a small rock which dries at low water. Between this rock and Kalla are from 11 to 18 fathoms, and between Kalla and the bar of Castlemain harbour from 9 to 5 fathoms. Crow Rock lies half a mile westward from Dingle harbour, being about half a mile from the shore; it is only covered at spring tides and is steep all round.

Ventry Harbour is of easy access, and capable of receiving large ships; the ground is good, and vessels may safely ride here in summer time; but in hard gales from the westward, and sudden squalls from the mountains, it is not considered sufficiently safe for the winter season. The best part of the harbour for large ships to ride in is about half way up, and near the middle in 4 or 5 fathoms. Small vessels may go further up, and anchor near the south side of the bay.

Dingle Harbour is fit only for small vessels, and they will lie aground at low

water on soft mud. Those who go into Dingle harbour should have a leading wind and flood tide in order to avoid a ledge of rocks which extends from Loch Point, half way over to Ringbeg, they should keep only about one third from the west side of the entrance.

Castlemain Harbour is very safe for ships to lie in, but is difficult of access, there being a spit of sand on each side of the outer channel; they run out from the two points which form the harbour's mouth, and extend nearly 2 miles to the westward. Near to the extremities of these spits of sand a bar runs across the channel, on which there is only 9 feet water. The sea generally breaks on the spits, and the breakers may be seen for a mile or two off. Ships drawing 12 feet water may go over the bar at half flood; but a pilot is necessary, there being no land marks which a stranger can be made easily to understand.

Dunmore Head lies about 4 miles to the north-westward of Ventry entrance; about 2 miles to the westward of Dunmore Head lies the east end of the Great Blasket; from the west end of the Great Blasket, the most southern of the Ferriers Islands lies S.W. by S.  $2\frac{1}{2}$  miles, and the Foze Rock lies from that W. by N.  $2\frac{1}{4}$  miles; the Foze Rock lies from the Great Skellig N. by E.  $\frac{1}{4}$  E.  $16\frac{1}{2}$  miles; from the Foze Rock, the westernmost of the Tiraught Rocks lies 2 miles N.N.E. from this rock. Innis Tuiskan E.N.E. 5 miles, from Sybel Head W. by S.  $\frac{1}{4}$  S.  $5\frac{1}{2}$  miles, and from Dunorlin Head the western point of Smerwick Bay lies E.N.E.  $\frac{1}{4}$  E. distant  $2\frac{1}{4}$  miles from Sybel Head.

Smerwick Bay cannot be considered a good anchorage, from being much exposed in northerly and N.W. winds, which cause a great swell; the ground, also, though principally composed of clean sand, has numerous foul patches in it. The best anchorage is on the west side, above a cable's length from the shore, below Smerwick village, in 6 or 7 fathoms. On the east side are some rocks, always above water, but are not dangerous. The western point of Brandon Bay is distant from Smerwick Bay near 9 miles, E.  $\frac{1}{4}$  N. on the west side of which a vessel may anchor in good weather. A small pier is erected here.

Maharee Point, a low sandy peninsula, forms the eastern side of Brandon Bay and the western side of Tralee Bay. Off this point lie the small islands and rocks called the Maharees: deep water is between these rocks. Eastward of these rocks about 3 miles, in the middle of Tralee Bay, is a steep rock called the Muchlogh. Muchloghbeg Rock is always above water, lying a mile E.N.E. from the east point of Maharee, and half a mile N.E. from it lies a rocky shoal, on which are but 12 feet. To clear it keep two-thirds from Muchlogh Rock and one-third from Muchloghbeg Rock. It shoals near Muchloghbeg S.W. and E.S.E. There lies, also, a shoal, with a swell on it, one quarter of a mile north of Muchlogh Rock; and a quarter of a mile east of a low rock, next to north of Muchlogh Rock, lies False Boat Rock, which dries at half ebb. Ships sailing to the Shannon, from Brandon Head, should pass to the northward of all the rocks off Mahore Head.

In Tralee Bay vessels should not lie long in the open bay, even in the summer time, but good anchorage is to be found on the east side of Samphire Island; but the channel being narrow, except in east or west winds vessels should not ride with more than half a cable. In sailing in take three quarters flood, and keep half a cable's length from the south side of the island. The channel up to Tralee, and also that behind Fenit Island, is fit for small craft only. Between Tralee Bay and the mouth of the Shannon lies Ballyheign Bay, in which there is no shelter.

The River Shannon is of easy access, being at the mouth near 9 miles wide, and

in which fleets of the largest size may ride in safety. Its entrance is between Kerry Head and Loop Head; on the latter a lighthouse is erected, showing a brilliant steady light, which, being 269 feet above the level of the sea, may, in clear weather, be seen a distance of 22 miles. The entrance may also be known by the Brandon Mountains, which may be seen 15 leagues off; as you approach nearer the coast you will discover the Blaskets mentioned before.

Loop Head, the northern side of the Shannon, bears from Kerry Head, the southern point, N.N.E.  $\frac{1}{2}$  E., and between them are from 14 to 27 fathoms. Three miles east of Loop Head is a small light called Kilbaha. The valley on the north side of Kilkadraan, 10 miles above Loop Head, having often been taken for a fair way by night, a light is erected on the top of a hill, being red towards the sea and bright white towards the river.

Carrigaholt Bay lies 9 miles from Loop Head; it is a good place for anchoring in, the ground being good and the depth from 3 to 8 fathoms; the marks are Carrigaholt Castle N. and Kilkadraan S.S.W.  $\frac{1}{2}$  W. In sailing, be careful to avoid Beal Bar, a spit of sand extending half a mile from Beal Point, on the Kerry side, which dries with spring tides; but on the outer edge has from  $3\frac{1}{2}$  to 15 fathoms. By shutting Ray Hill, on Kilkadraan Cliff, you clear it.

Scattery Island lies about 4 miles further; it is a low island, marked by a lofty tower and battery at the south end, a rocky shoal, called the Rinana, lies S.S.W. from the battery; there are  $2\frac{1}{2}$  fathoms on the south part, which is the shoalest, and on other places  $3\frac{1}{2}$  to 4 fathoms. The mark for the south end of the shoal is, the top of Ray Hill a little open to the southward of Kilkadraan Cliff, or keeping over towards Carrig Island. The north end lies with Scattery Tower on with the west end of the Clay Cliff, on the south end of Scattery, and the north part of a hummock which may be seen at Kilkadraan Cliff, on with the top of Ray Hill. On the east side of Scattery, you may anchor with Beal Point, but not the Castle, shut in with the south point of the island, and Scattery Tower N.W. by W. when you will find a good clay ground with 6 or 7 fathoms water. On this side of Scattery, a spit of sand runs out about a cable's length S.S.W. from the point near the old building; the least water is 6 feet. A small rock lies about a cable's length from Scattery, opposite Flog Island, which only dries at low spring tides. The west side of Scattery is shoal in most parts about half a cable's length from shore. On the north end is a rock, which lies about a cable's length from shore, which dries at spring tides only. From the east part of this rock is a sand bank, which extends to the N.E. part of the island.

Small vessels may anchor on the north east side of Flog Island, tolerably safe, in 4 fathoms; a spit of sand runs a cable's length from the east end of the island. The Revenue Pier is opposite to this on the Clare side, having but 6 feet water at the head of the Creek; up to Kilrush it is fit only for boats at high water.

Poolnasherry is a small creek to the north of Scattery. Small vessels may ride safely in the channel between Comoge and Carinacoola, in  $1\frac{1}{2}$  fathom; in sailing in, avoid the rocky ledge of Bamaharna, on the starboard, which dries at half ebb.

Canigafuyle Creek, on the opposite shore, affords shelter for small vessels under the old castle, in 2 fathoms: enter at high water.

Tarbert lies 2 leagues eastward from Scattery: a cable's length south of Tarbert Point, a vessel may stop in 4 or 5 fathoms, especially at flood tide, which has but little strength here, but the ebb running 3 miles per hour in spring tides, it may be inconvenient to lie long here. The Carrickvillan or Bowlin Rock lies to the eastward of this anchorage, about a cable's length from the opposite shore of Kilkerran.

By keeping the town of Scattery Island on or to the southward of the high water mark of Tarbert Point, you avoid this rock on the south side; between the rock and Kilkerran shore there is a passage in which are 2 fathoms; those who find it necessary to go through it should keep half a cable's length from the shore; on the N.W. point is a fixed light.

Labasheda Bay has good anchorage about half a mile to the eastward of Redgap, and nearly half a mile from the north shore, in from 3 to 6 fathoms. It is 4 miles above Tarbert Point: ships may lie here out of the stream, with good ground and well sheltered.

Foyne's Island is 4 miles above Labasheda Bay. The best anchorage for large ships, off this island, is S.E. from Cahircon House, and S.S.E. or S. from Innis Murray, a small island which lies about a mile to the eastward of that house, in from 5 to 12 fathoms, good ground. Above this are many rocks and shoals.

The Beeve or Seal Rocks, laying to the eastward of Foyne Island about  $2\frac{1}{2}$  miles, are nearly in mid-channel, and begin to uncover at about two hours' ebb.

The Carrickaginan Rock, sometimes called the Fleming Rock, lies a quarter of a mile eastward from the north point of Achanish Island, it dries at half ebb. Some other rocks lie about half a mile to the eastward of the little island next to the Achanish; to avoid these rocks, keep Beh Castle on with the north end of the Keepers. To the southward of the Beeve Rocks about 1 mile, lies the Horse Rock, covered only at spring tides. Rinellan Point just shut in with Achanish Point, will carry you clear on the north side of it; on the east side of this rock is a channel for some small craft up to Askeaton.

From the Beeve Rocks to Ballinbochag Point, is nearly 2 miles, a mile further is Beh Castle, N.E. by N., from which is the west end of a sand which runs in mid-channel, for about 3 miles, to an islet called the Sod Isle. On this bank are four rocks; Carrickcheol or Carricacloush, is the most western, and begins to dry at half ebb; the next appears at 2 hours' ebb; the third is not quite covered at high water neap tides; and the fourth, being the easternmost, at three-quarters ebb. The west end of the sand is always covered, having from 2 to 6 feet. The extremity of this part of the sand bears N.E. by N. from Beh Castle.

In the middle of the channel, about S.E. from Carrickcheol Rock, lies a rocky shoal, it has but 4 feet water on it, and is nearly half a cable's length from north to south. The mark to clear you on the north side is, the north point of Foyne's Island; keep a boat's length without the high water mark of Ballinbochag Point.

From Rimmylan Point, nearly 2 cables' length north, lie the Bridge Rocks, which dry at half ebb. To avoid them on the north side, keep the north point of Foyne's Island on with Beh Castle, or rather between the Castle and the high water mark of Ballinbochag Point. Nearly half a mile eastward from Sod Island there is a small rock which does not appear till 4 hours' ebb.

To sail up the channel from Ballinbochag Point, (which is the point next to the westward of Beh Castle) to Sod Island, go in Ballinbochag Point, a berth of about  $1\frac{1}{2}$  cable's length, and when past Beh Castle, keep the point of Foyne's Island a boat's length open of Ballinbochag Point, until you are nearly abreast of that rock, which lies next to the eastward of Carrickcheol; or until a remarkable white house on the north side of the river comes open on the east end of a green hill which is near the river and divided into enclosures; then keep the point of Foyne's Island on with Beh Castle until you are abreast of Sod Island, to which give a cable's length berth, and steer for Kay Island or a little to the southward of it. Many rocks and shoals lie between Kay Island and the city of Limerick, particularly a

little east of Bush Island and the Whelps and Scarlets of Newtown Point, which dry about three-quarters ebb. A beacon tower distinguishes the Scarlet Rocks. From Key Island to Limerick a pilot is quite requisite. The port of Limerick is a mile below the town, with two fathoms water, and a bottom of soft mud.

Limerick is situated about 60 miles up the Shannon; at this part of the river vessels of 300 tons may discharge their cargoes. The river is also navigable for barges and steam-boats for 150 miles further up, and communicates with the Grand and Royal Canals to Dublin and Limerick; has a floating dock, the gates being 40 feet wide, and with 18 feet water.

Two miles above the Beeve Rocks the channel of the Fergus turns to the north east. Although wide, is much encumbered with mud banks. Vessels may stop in the channel about half a mile or more southward of Inishtagman Island, on 2 fathoms, the least water, or they lie aground in the channel above West Ing, well sheltered on soft mud. Small craft only can get up to Clare.

From Foynes Island to Limerick, spring tides rise 16 feet and neap tides 9 feet.

Tides from Waterford to Loop Head.—About 3 or 4 leagues without the Hook Point of Waterford, the tide sets east and west. When it is half flood by the shore the tide begins to set east, and so continues for 6 hours; it then turns, and for the other 6 hours sets west.

On the east and north sides of Tuskar, the strongest spring tides run four miles an hour, and neap tides about  $1\frac{1}{2}$  mile. Near the Saltees the strongest stream runs about two miles an hour; between the Saltees and Hook Point it runs about one mile an hour; and at the Hook Point three miles an hour. At this point a meeting of different streams makes a ripple or breaking of the water. Along the east side of the Hook Point, the stream, from half flood on the shore to half ebb, runs to the northward; and from half ebb to half flood, it runs to the southward. On the west side of Hook Point, and within a cable's length of the shore, the stream runs south from half flood to half ebb, and north from half ebb to half flood.

Between Hook Point and Dundedy Head, the principal stream of flood sets in from westward, and the ebb from the eastward; and 4 or 5 miles from shore, the strongest spring tides do not run above 1 mile in an hour, except near to the headlands westward of Kinsale, where they run, when strongest, about 3 miles an hour.

Between Dundedy Head and Cape Clear, 1 mile from the shore, the strongest spring tides do not run more than one mile an hour, but near the headlands they run two miles in the same time.

The stream of flood continues to run along Mizen Head for 2 hours later than to the eastward. The flood tide sets from the N.W. along the coast, west of Cape Clear, and the ebb from the S.E. In the offing, about a league from shore, the strongest spring tides do not run above one mile and a half an hour. Within a mile of Mizen Head, the tide of ebb, or westward stream, runs  $3\frac{1}{2}$  miles an hour, and commonly makes a rough sea there. The tide of flood, or eastward stream, does not appear to be any rougher there than in other parts, unless the wind blows hard. In the bays, the stream of tide is scarcely sensible.

From Waterford to Cape Clear, the tide in the offing runs about three hours after high water on the shore.

From Cape Clear to Dursey Island, it is high water on the shore, full and change days, at 3 hours 45 minutes; but along Mizen Head the stream of ebb does not begin till two hours after, and three hours later at Dursey Island. The flood tide sets in from the N.W. along this part of the coast. Off the coast, spring tides, when strongest, run not more than one mile an hour, except near the Bull and Cow

Rocks, where they run 3 miles an hour; and near Mizen Head the stream of ebb runs  $3\frac{1}{2}$  miles an hour. Between Dursey Island and Brea Head, it is high water on the shore of the bays at 3 hours and 30 minutes. The stream of flood which comes from the westward off this coast divides near the Skellig Rocks into two branches, one of which runs northerly, and sets into the different bays in its way, whilst the other runs S.E. towards the Bull and Cow Rocks. Between the Bull Rock and Dursey Island, spring tides run 3 miles an hour, neap tides one. In Dursey Sound the stream runs 4 miles an hour when strongest; in Kenmare River and the bays near it, it is scarcely perceptible. The stream in the offing does not shift till after half tide on the shore.

It is high water in Dingle Bay full and change days, at 3 hours 30 minutes; at the Blaskets, and from thence to the Shannon, at 3 hours 45 minutes. The stream of flood along the Blaskets sets in from the S.S.W., and the ebb from the N.N.E. In the Blasket Sound spring tides run 2 miles an hour; in Dingle Bay,  $1\frac{1}{2}$  mile an hour, except at the mouth of Castlemain Harbour, where it runs 2 miles an hour. From the Blaskets to the mouth of the Shannon the stream is scarcely perceptible.

---

## SECTION XI.

### THE COAST OF FRANCE FROM CALAIS TO THE CHANNEL ISLANDS.

Calais lies  $22\frac{1}{2}$  miles S.E.  $\frac{1}{4}$  S. from Dover. As you approach it from sea it appears like an island, with six windmills and three principal steeples, one large the other two smaller. From Grisnez it is distant about 13 miles, a little south of east. In sailing in from sea, with northerly winds, the harbour is somewhat dangerous, in which case keep the mill which stands on the east side of the town on with the head of the eastern jetty, and then run close in by the jetty. Keep to the eastward of Paradise Basin when within the jetties, where you will be dry at low water: with favourable winds sail towards the pier-heads with a S.S.E. course. It is better not to enter the harbour until near high water, the tides running strong and many vessels lying in the way. Inside the harbour there is from 15 to 18 feet water, according to the wind; off the jetties 21 feet. A flag is hoisted on Fort Rouge when there is 10 feet water in the harbour during the day, and a light during the night. From the tower of Calais is exhibited a revolving light, which first increases for 30 seconds, is then full for one minute, decreases for 30 seconds, and is dark for one minute, completing the whole revolution in 3 minutes: it may be seen for the distance of 6 leagues.

To the north-westward of the harbour lies Calais Road. The best anchorage is the great Steeple on with the westernmost Fort, and Cape Blancnez two sails' breadth open of Calais land; the ground is good for holding, mud mixed with gravel, depth 16 and 17 fathoms, and sheltered by a sand bank which begins a little to the westward of Fort Lapin, gradually lessening until it ends in a point off Fort Vert.

Nearly north, and more than a mile from Blancnez, lie two small patches of shoal water, the one having 5 fathoms the other only two fathoms, but with from 6 to 10 fathoms around them; there is a good channel between them and the shore, but as

there is said to be some sunken rocks at the end, near Calais, great caution should be used in taking the passage. Blancnez is so called from its white appearance.

Two lighthouses have been lately erected on Cape Grisnez, the largest of which exhibits a bright fixed light 49 feet above the base of the tower, and 193 feet above the high-water level of the sea; and may be seen, in clear weather, from the distance of 7 leagues. The other stands 55 yards N.W. from it, but is not so high by 26 feet; from this a light is shown, varied by a flash every three minutes, each flash being preceded and followed by short eclipses; but this light will not be visible till within 4 or 3 leagues of the Cape.

Near Cape Grisnez, to the E.N.E., is a flat 2 miles in length, called the Anclim Bank, or Banc la Ligne, having from 1 to 5 fathoms on it at low water. In proceeding towards the Cape, vessels may stop a tide near the bank, in from 10 to 17 fathoms, good ground.

From Cape Grisnez the east end of the ridge bears N.W.  $\frac{1}{2}$  N.  $9\frac{1}{2}$  miles, and the west end nearly W. by N. 12 miles. Between the ridge and the shore are from 20 to 30 fathoms; the deepest water being near the ridge. You may stand towards the shore into 7 fathoms, without danger. Here, as at Dungeness the North Sea and Channel tides meet.

From Cape Grisnez to the entrance of Boulogne is S.S.W. nearly 3 leagues. About a mile and a half to the southward of the Cape, in St. John's Road, is an anchorage of 9 to 15 fathoms, where ships lie secure from E.N.E., East, and S.E. winds; but with the wind strong from S.W., West, or N.W., it is dangerous; and as the ground for about a quarter of mile from the shore is foul and rocky, be careful not to come within that distance, nor into less than 9 or 10 fathoms. Between this road and a point to the westward of Boulogne are several sunken rocks, some of which lie nearly half a mile from shore.

The town of Boulogne is divided into the upper and lower town: the latter is called Boulogne-sur-Mer. The harbour has been considerably improved. The basin has been so enlarged that it is now capable of holding several hundred of small vessels; new piers have also been built. From a notice issued by the Chamber of Commerce at Boulogne, it appears that, from July, 1835, the tide lights, which were formerly placed on the western jetty, have been removed, and are now placed on a vertical mast on the new watch-house (Musoir) of the south-western jetty, and that the red light established in that place is removed to the north-eastern jetty: it is visible at the distance of one or two miles. The tide lights may be seen at the distance of 4 or 5 miles.

Vessels making for the port will, therefore, have the red light on the larboard and the tide lights on the starboard. When the wind is S.S.W. or S.W. the vessels must be kept to the windward of the entrance, in order to make the watch-house (Musoir), and come as close to it as possible on account of the current, which sets at the extremity of the jetty in a northerly direction, and at the rate of about from 4 to 5 knots. It is equally important to remember that the watch house (Musoir) of the south-western jetty protects into the sea 170 metres beyond the extremity of the north-eastern stockade, and that the breadth of the channel in the deepest part at the entrance is 72 metres. To render the watch-house of the S.W. jetty more easily discernable, all the parts above the high tides are painted bright yellow. It is arranged that, as heretofore, the tide-lights are only to be lighted from the half flow to half ebb tide, the former period being indicated by a single light, the latter by two lights. In other states of the tide it is prudent not to make for the port, except with a pilot of the place. In the high equinoctial spring tides there are 8



metres, 78 cents. of water in the channel, and in the neap tides only 6 metres, 6 cents. The passage is perfectly free and clear, and vessels may come aground without peril in the channel. The old channel is entirely obstructed by sand, and is irremediably impracticable. Ships may anchor in from 6 to 9 fathoms off the harbour, at the distance of about three-quarters of a mile from the shore. About 3 miles without the harbour's mouth there lies a bank, called the Bassure de Baas; it stretches from Ambleteuse, in a curve to the S.S.W. and S.W. 24 miles. It is about half a mile broad, and has generally from 4 to 7 fathoms on it. The shoalest part of this bank has only 17 feet; it lies with the entrance of Boulogne S.S.E., distant three miles. Close to this bank on each side are 11 and 14 fathoms.

On the north of the town, on a hill, is placed the column of Napoleon: it stands about three-quarters of a mile out of the town. The height of the column is about 160 feet, and the statue of Napoleon, which surmounts it, 16 feet.

About one league to the S.W. of the entrance of Boulogne is Point Alprec. From the tower of an old semaphore is shown a fixed light, being elevated 154 feet above the sea: it may be seen at the distance of 4 leagues in clear weather.

Etaples, at the entrance of the river Canche, is about 4 leagues from Boulogne; the banks at the entrance shift so frequently that no description can be of any avail. The harbour dries at low water. The harbour light may be seen at the distance of 2 leagues: the light is a fixed one, and on the north side of the harbour, at Point de Lornel. On the south side of the harbour on Trouquet Point are two other lights, standing apart from each other and distant from the north light half a league.

On the northern side of the mouth of the river Authic, on the Point de Beck or de Haut Banc stands a fixed light, elevated 65 feet above the level of the sea at high water, and may be seen at the distance of three leagues.

The town and harbour of St. Valery lies at the entrance of the River Somme, being about six leagues from Etaples. It is capable of receiving merchant vessels; but is difficult to enter in consequence of a sand-bank barring up the entrance, on which the tide rises only 8 or 9 feet, although the rise of tide outside is from 25 to 30 feet. The passage, which is intricate, is generally buoyed.

At Cayeux, on the south side of the entrance into the Somme, is a new tower, exhibiting a light elevated 91 feet above high water, which is intermitting, or varied by flashes. These flashes, having a duration of from 8 to 10 seconds, succeed each other every 4 minutes. The faint light, seen during the intervals, is preceded and followed by very short eclipses. In clear weather the flashes may be seen 5 leagues off.

At the entrance it is high water, on full and change days, at 10h. 30m. To the west of the lighthouse, vessels bound into the harbour generally anchor in 5 or 6 fathoms, good ground. The flood tide runs in the offing until eleven o'clock, and the stream sets about E.N.E.

Off the coast, at unequal distances from the land, between Etaples and St. Valery, in the River Somme, lie three long banks, namely, the Bateur, Quemur, and Bassurelle, in a N.E. and S.W. direction, nearly parallel with each other; neither of them is dangerous, the depth over them, from 6 to 8 fathoms, being nearly equal. Between are from 10 to 20 fathoms, gradual soundings. The Bateur is the outer one: it lies ten miles from the land; the middle one is the Quemur; and the inner one the Bassurelle. The latter is 6 miles in length, extending directly athwart the entrance of the Somme, at the distance of 5 miles. The soundings upon it are grey sand and broken shells. At the inner edge of the Bassurelle are 8 fathoms, and as you approach the Somme River, the water shallows to 5, 4, 3, and 2 fathoms.

Treport lies about 3 leagues from the entrance of the river Somme. on the western jetty there is a steady tide light, elevated 26 feet above the sea, and may be discerned from 2 to 3 leagues off in clear weather. This harbour is only fit for small coasting vessels. Between Treport and the river Somme the shore is flat and the soundings irregular; so that, in many places, only 18 feet will be found 3 miles from the beach, and you will as suddenly drop into 6 and 8 fathoms. There are also several rocky ledges along the shore in this neighbourhood. When bound in to the river Somme, therefore, keep the light on Point de l'Ailly in a W.S.W.  $\frac{1}{2}$  W. direction, which will lead without these dangers directly to the entrance of that river, and you will obtain sight of the light at St. Valery-en-Caux on losing sight of that on Point de l'Ailly, or nearly so.

The tide here, both ebb and flood, runs along the land, so that there is little or no offset at any time.

There is a ledge of rocks about  $3\frac{1}{2}$  miles from Treport W. by N. and 2 miles from shore, and having only 7 or 8 feet at low water. To the westward, nearly  $4\frac{1}{2}$  leagues from Treport, is the road, where ships anchor, waiting for the tide to run into Dieppe. The ground is good in 6 or 7 fathoms, well sheltered from easterly and southerly winds, but exposed to all others.

From the river Somme to Dieppe the coast trends in a W.S.W. direction about  $7\frac{1}{2}$  leagues. Dieppe is situated in a valley between two cliffs. When you are coming in from the sea you discover two high steeples and a large castle, which stands to the westward of the town. On the north-east side of the town are the suburbs of Paulet and the two stone jetties, betwixt which lies the entrance of the harbour. This harbour is rendered very difficult of access by the rapidity of the current, both inwards and outwards. As soon as you have anchored in the road of Dieppe you are visited by the pilots, and a signal is made on shore when it is thought proper for you to enter the harbour. If you should happen to stay until the ebb makes out, the rapidity of the current would make an attempt to enter extremely hazardous, if not impossible. In the harbour vessels lie at the quay well sheltered from all winds.

Formerly the time of tide for entering this port was indicated by an intermittent light exhibited from a small tower erected 35 yards from the western jetty head, but since November, 1837, this has been changed to a fixed light, at 39 feet above the level of high water; it may be seen 3 leagues off, and is kept lighted only while there are  $10\frac{1}{2}$  English feet at the entrance of the harbour. The tides flow here at half-past ten o'clock, and rise about 19 feet.

Cape de l'Ailly lies about  $4\frac{1}{2}$  miles to the westward of Dieppe, upon which is erected a revolving light, the eclipses succeeding each other at an interval of 80 seconds, the whole revolution being completed in 4 minutes, during which time there are three brilliant illuminations; the light being elevated 306 feet above the level of the sea, may be seen in clear weather at the distance of 7 leagues. Off this point the ground is foul to the distance of 2 miles from the shore; at the distance of half a mile from thence you may get 13 fathoms; by keeping, therefore, in not less than 14 fathoms you avoid all danger.

St. Valery en Caux lies about 10 miles W. by N. from Cape l'Ailly, the ground between them is foul. Towards St. Valery, the shore is clifty, over which many woods and steeples may be seen. The cliff has two openings, with two villages; in the third opening appears St. Valery, with a small harbour which dries at low water; near the end of the jetty is a tide light, which denotes a depth of not less than 8 French feet at the end of the jetty.

Fecamp lies about 5 leagues W.  $\frac{1}{2}$  N. from St. Valery. Between these two places the high white cliffs continue, with three valleys between, almost down to the shore. The town may be known by a large church on the north-east side, up the edge of the coast; it is situated in a broad valley. It is easy of access, unless with a fresh wind from the west or south-west. It has two roadsteads: the Great Road lies about 2 miles from the shore opposite to Criquebœuf; good holding ground, clay and sand, with 13 fathoms' depth. The Little Road has from 10 to 7 fathoms, and lies on the western side of the harbour. Upon a tower erected on the Monte de la Vierge, on the left of the entrance of the port of Fecamp, is a lighthouse with a brilliant fixed light, is 427 feet above the level of high water, and may be seen at the distance of 6 leagues.

At the northern jetty, and at the foot of the Monte de la Vierge, there is a tide light, which is only lighted when there are 10 feet or more water at the entrance of the harbour; it flashes once in 3 minutes.

On any part of the coast between St. Valery and Fecamp, there being good anchorage, vessels may stop a tide.

Off Cape Antifer there are some sharp-pointed rocks called Les Aiguilles, but they are close to the shore and bold close-to.

It is of great importance that vessels in their progress up Channel, who are desirous of keeping the French shore on board, should consider attentively the relative positions of the several lighthouses; for in like manner as the three lights on the Casquets will in many situations appear but as two, so the lights on Cape la Heve, if fallen in with in a S.W. direction, will show as one, being of equal height. The lights on Cape Barfleur and Point de l'Ailly are each revolving, but in this case no misconception can arise, as the intervals are very different, and as on similar bearings, and at equal distances, the difference in the soundings amounts to no less than 10 fathoms. The lighthouses are of equal height, but so placed as not to appear in a line by any vessel from the N., N.W., and W., in order that no vessel shall mistake them for either l'Ailly or Cape Barfleur, which stand singly. The southern tower stands 50 fathoms from the edge of the cliff, and the other bears from it N.E. and distant 34 fathoms. The lights are fixed and very brilliant, 446 feet above the level of the sea, so that they may be seen at the distance of 7 leagues. When navigating at the mouth of the Seine do not attempt to bring the lights in one until 4 hours' flood. At about one mile W.S.W. from the Cape there is a ledge of rocks called l'Eclat, on which, at ebb tide, there is no more 7 or 8 feet water.

Havre lies  $2\frac{1}{2}$  miles S.S.E. from Cape la Heve: the land all the way between is low, with numerous windmills. This port is at the mouth of the River Seine, and is properly the sea-port of Paris. The harbour, which lies within the walls of the town, extends east and west. The entrance is formed by two stone piers, on each of which is a tower. The longest jetty is on the western side; at the end of which is a superior harbour light, elevated 23 feet, and visible 3 leagues off.

In this harbour the water does not perceptibly ebb till three hours after high water: in consequence of this peculiarity fleets of 120 sail have often left it in one tide, and even with the wind against them. This uncommon effect is generally ascribed to the Seine, whose current, when the sea begins to ebb, crosses the pier-heads with such force as to prevent the water in the harbour from running out, until the water without has fallen to a certain degree below it, which generally happens about three hours after high water.

It has been remarked that, in this part, at about the full and change of the moon, the currents are so strong, and the winds so high, that ships which happen to be

in the roads are in danger of being lost in the mouth of the river, or driven against the coast.

It is recommended to all who are bound into the port to take a pilot, as they are always attending for that purpose, commonly as far off as Cape Barfleur, unless the weather be so bad that they cannot get off; in that case they go the north side of the entrance and make signals, by which you may know when you may safely enter the harbour; in doing which, take care to keep it always open, so as to see all the ships in it between the two towers; and thus steer in, passing nearer to the great tower on the larboard than to the little one on the starboard side.

There are two Roadsteads without the entrance of the river: the Great Road, which is a league and a half from the harbour, is 3 miles in extent from north to south, lying west from Cape la Heve; and the Little Road, lying to the southward of the cape, half a league from the harbour. The two roads are separated by banks called the High Grounds of the Road and the Eclat Bank; the Little Road being within, and the Great one without, these banks.

In the Outer Road are 9 and 10 fathoms at low water. The inner one extends about three-quarters of a mile every way. Its bottom is clay and good ground, but so covered with pebbles and oysters, that ships which lie only one tide generally moor, to avoid damaging the cables. Ships waiting for a tide, will, therefore, always prefer the outer to the inner road.

The best anchorage is a league to the west of La Heve, on oazy ground, in about 10 fathoms at low water, with the Castle of Orcher (on a steep cliff 3 leagues to the eastward of Havre) a little open of Ingouville land to the northward of Havre. In bad weather a vessel may lie here moored north and south with two anchors.

Here the flood tide sets as follow: the first two hours, south; the next two hours, south-east; the fifth hour, east; and during the remainder of the tide, it sets from N.E. to N.W.

Should it be required to go into the Little Road at low water, either to wait for a tide or pilot, and should the wind permit, steer up between La Heve and l'Eclat, keeping the guard-house that stands on the Jetty of Havre, S.S.E.  $\frac{1}{4}$  E. in a line with the chapel, called Notre Dame de Grace, that stands a little to the westward of Honfleur. Continue in this direction until the coast to the northward of La Heve is shut in with that cape. Proceed next on a south course until half-way between La Heve and Havre, where you may anchor in from 3 to 4 fathoms at low water, but in danger of having the cables injured as before mentioned.

If a wind prevailing from between S.S.W. and W.S.W., should prevent a vessel's going within l'Eclat from the Great Rock, she may sail into the southward, between l'Eclat and the Bank les Hauts, by keeping the castle of Orcher in one with the two towers of the gate of Ingouville, which appears joining to the northern part of the town, and steering thus until the land to the northward of Cape la Heve be shut in with the cape, as before described.

In any part of the channel within l'Eclat, vessels may anchor for a tide in from 3 to 4 fathoms.

Signals at Havre. By a regulation established in 1829, black balls, varying in position and number, are exhibited on a mast and yard, erected upon the N.W. jetty of Havre, to denote the depth of water, in French feet, which there was in the channel into the port during the previous tide, and which is made known by the following arrangement:—

One ball, at either yard-arm, denotes 11 feet; two balls, one at each yard-arm, 12 feet; three-balls, one at each yard-arm and one half-mast high, 13 feet.

One ball, at the mast-head, 14 feet; two balls, one at the mast-head and one at either yard arm, 15 feet; three balls, one at the mast-head and one at each yard-arm, 16 feet; four balls, one at the mast-head, on half-mast high, and one at each yard arm, 17 feet.

One ball at the mast-head and a pendant over it, 18 feet; two balls, one at the mast-head with a pendant over it, and a ball at either yard-arm, 19 feet; three balls, one at the mast-head with a pendant over it, and one ball at each yard-arm, 20 feet; four balls, one at the mast-head with a pendant over it, one ball at each yard-arm, and one ball half-mast high, 21 feet.

The addition of 6 inches is shewn by a pendant at one of the yard-arms.

These signals may be distinguished, with a common telescope, at the distance of a league, or a league and a half from the harbour.

Harfleur lies about 3 miles to the eastward of Havre on the north side of the river. On the Pointe du Hoc, there is a harbour light, elevated 26 feet above high water, and may be seen at the distance of 2 leagues. The light is a stationary one. There are also 2 small leading lights. By keeping them in a line you avoid the rocks in entering the port.

Honfleur lies on the south side of the river Seine, about 2 leagues from Havre, and has a small harbour and basin. In the river between them are several extensive shifting banks, the principal one of which is Amfar. This bank is about six miles in length and half a mile in breadth, extending nearly E.S.E. and W.S.W. Its west end lies about S.W. by S. from Havre, distant 1 mile: the other banks lie more to the southward. The west end of one of them, called Ratier, lies N.W. by W. about 5 miles. Both these banks partially dry at low water. There are several banks, which dry at low water, between the little river of Touque and Ratier; between these and the land, as also between them and Amfar, there are passages; but those unacquainted would, of course, not attempt them without a pilot, as the danger of the banks is considerably increased by the rapidity of the tides. The great bank which lies to the northward of this river is called the Trouville: it lies in the direction of the coast, and dries nearly to the extent of a league.

Two fixed lights at Honfleur, for the tide and channel, are elevated 32 and 29 feet; the western and highest is on the hospital jetty, at the N.W. extremity of the town, and the eastern on the quay north of the new basin. Seen at 3 to 3½ leagues. At the mouth of Touque River, 7½ miles south-westward from Honfleur, are two fixed lights on the western side of the entrance, at the distance of 155 yards from each other. The lower is a tide-light, seen two leagues off, kept in while there is a depth of 7 or more feet of water at the entrance; the upper light is permanent, and 32 feet above high water. The lights in one give the direction of the passage inward. Seen between two and three leagues off.

The small harbour of Dive lies about 12 miles from Honfleur. Between these places the land is high, but may be distinguished by having three valleys between them. From Dive to the westward of Orne are sandy downs: it may be known from three steeples being at the extremity. To the N.W. point of Orne, about 2 leagues, are some rocks, called the Shars de Langrune: they are about 2 miles from shore. The Lions, equally dangerous, lie between. The rocks of Calvados, further to the westward, stretch out from the shore for about 2 leagues, partially uncovering at spring tides. There being 10 to 12 fathoms close to them, you should not approach nearer than 14 or 15 fathoms.

There are two harbour lights at the river Orne, both fixed and stationary; these are situated on the west side of the entrance, and bear N. 24° E. and S. 24° W.

(nearly N.E. and S.W. by compass), from each other, distant 3600 feet. The outer light stands on the Denes, near the redoubt of Oysterham, or Oystreham; its elevation is 39 feet 4 inches, and may be seen 8 or 9 miles off in clear weather: the inner light is placed upon the church of Oysterham, 91 feet 9 inches high, and visible 4 leagues. These two lights brought in one lead directly into the channel.

From the river Orne to the harbour of Isigny the land is of sufficient height to be seen 6 or 7 leagues off.

Corseule lies about 9 or 10 miles westward of the river Orne: it is a small harbour between two jetties. On the western one is shown a fixed light, elevated 30 feet above spring tides, so that it may be seen at the distance of two leagues.

Pointe de Ver lies about 2 miles to the westward of Corseule; here a lighthouse, 137 feet above the level of spring tides, in fine weather, may be seen at the distance of 5 leagues: it is a flashing light: the flashes succeed each other every four minutes, lasting from 8 to 10 seconds. The least light, seen in the intervals between the flashes, is preceded and followed by short eclipses.

Port en Bassin is a small fishing town, about  $9\frac{1}{2}$  miles from Point de Ver, and nearly 5 to the eastward of Isigny. Two lofty woods, appearing like hummocks, distinguish this part of the coast. Grand Champ, another fishing village, lies about 4 leagues to the westward. At both places are temporary lights for the use of the fishermen; that of Port en Bassin, during bad weather, only from September to April. They may be seen at the distance of one league.

The small islands of St. Marcon lies W.N.W. from Cape la Heve 16 leagues, and  $5\frac{1}{2}$  W. from Cape Barfleur about 4 leagues: they are of moderate height: a vessel may sail around them as well as anchor between. A long sand stretches out from each end: that on the south for 6 miles, having on it from 2 to 5 fathoms; the other towards the north-west for between 4 and 5 miles, having from 3 to 4 fathoms. A fixed light is shown from the tower of St. Marcouf 56 feet above the level of the sea, which may be seen at the distance of 3 leagues in clear weather. Half way between Cape Barfleur and the isles of St. Marcouf, and 4 miles from the coast, lies Banc de Fer, with 2 fathoms on it. It lies about E.  $\frac{1}{4}$  S.  $4\frac{1}{2}$  miles from the Isle of Tatihou, and is 4 miles from the nearest part of the coast.

Between Cherbourg and Cape Barfleur, where there is an excellent light, which revolves every half minute, the coast is infested with rocks, close to which 15 fathoms will be found; in thick weather, therefore, no ship should approach nearer than 26 fathoms, which is not more than 2 miles from the projecting rocks. During spring tides the sea about Cape Barfleur exhibits a continued sheet of broken water, from their rapidity, sometimes almost six knots, and is from thence called the Race of Barfleur.

The course from any position off the Casquets to a similar position off Cape Barfleur is S.E. by E.  $\frac{1}{4}$  E., and the distance 15 leagues; and from thence to another similar position off Cape Antifer, 18 leagues more on the same course. In running, however, from the Casquets towards Cape Barfleur, attention must be paid to the tides; as, between half-ebb and half-flood, the indraught of the Channel Islands is in operation.

To the south-eastward of the lighthouse is the small harbour of Barfleur, which dries at low water, and fit for vessels drawing only 10 feet: it may be readily entered by keeping in mid-channel. On entering the harbour on the larboard hand are two small lights, which, kept in a line, denote the passage in. They may be seen at the distance of 2 leagues.

It may be useful here to remark, that vessels coming from the northward for Havre will see the revolving light of Cape l'Ailly, which, in fine weather, can be kept in sight until the fixed light of La Heve appears; as also that, in going down channel, you will not long lose the sight of La Heve before that of Barfleur is seen; and ships coming from sea for Havre, after passing the Caskets, will presently see that of Barfleur.

The lighthouse on La Heve being N.E. and S.W. by compass, ships to the northward can never see them in a line; for, if you see a single light to the southward, without having previously seen the land, it cannot be otherwise than that of Barfleur or l'Ailly; it would, therefore, be dangerous to continue your course without sounding.

From the land the water is deeper near Barfleur than l'Ailly. From the N. to N.W. of Barfleur, at 5 or 6 leagues distance, there is between 35 and 40 fathoms, with coarse ground; at 3 leagues off, from 28 to 30 fathoms, coarse gravel; and 20 to 22 fathoms, very near the shore, coarse brown sand; whereas, off l'Ailly, from N.W. to N.E. from the lighthouse 5 or 6 leagues, are from 20 to 24 fathoms, mixed ground, shells, gravel, pebbles of different colours, and reddish rock. Nearer to the shore, from 2 to 4 leagues, you get the same description of bottom, but only from 18 to 20 fathoms.

A ship from the westward should not come nearer Barfleur than 20 to 22 fathoms; but if bound to the Seine, after seeing the lights of La Heve, should wait for the tide, not approaching nearer than 14 or 15 fathoms. Towards Barfleur from the Seine keep your soundings about 16 and 20 fathoms, the ground small pebbles, with very little sand, steering N.W.  $\frac{1}{2}$  N.

To the southward of Cape Barfleur, about 7 or 8 miles, is the small harbour of La Hogue. It is sheltered on all sides except from E.S.E. to S.S.E., and is capable of admitting ships drawing 12 or 14 feet water. The passage is easy, but best on the north side, as on the south are several rocks. It dries at low water: the ground is clay. The road of La Hogue lies to the southward of the harbour, where ships may ride in from 5 to 9 fathoms: sand and clay: secure from all winds if the ground tackle is good. The tide flows at full and change till three quarters past eight o'clock, the water having a rise of 16 feet.

There are three lights for the Road of La Hogue: on the redoubt of Reville, on the mound of Morsaline, and on the southern extremity of the fort of La Hogue.

The official notice of these lights adds the following instructions for entering the Roads and Port of La Hogue:

The Reville Light in one with the intermittent light on Cape Barfleur, gives a line which must not be crossed to the westward by vessels working at night to the southward when abreast of the isle Tatiou.

The Lights of Morsaline and Fort La Hogue, when in one, indicate the northern limit of the channel by which large vessels should enter the Road; and this line of direction just touches the southern side of the shoalest of the Ouest Drix Rocks, over which there are only 14 feet at low water spring tides.

In order to approach the anchorage, in a large merchant vessel, it is necessary, when proceeding from the point where the two lines of direction, above-mentioned, cross each other, so to steer as always to keep Fort La Hogue light some degrees open to the northward of Morsaline light, which is readily distinguished from that of La Hogue by being much higher.

A ship of the line, having reached the point where the above-mentioned two lines

of direction intersect each other, may steer W.S.W. for the anchorage in the Great Road. On this track it passes between the flat of the Ouest Drix and the north point of the Banc du Bec.

There is reported to be a sunken rock to lie E.N.E. of the lighthouse of Cape Barfleur about 6 miles.

Cape Levi lies about 8 miles to the westward of Cape Barfleur. The ground between them is very foul, so that vessels should not anchor in less than 22 fathoms; you will then be about  $2\frac{1}{2}$  miles from shore. The Grand Renier rock lies about  $4\frac{1}{2}$  miles to the southward of east, and a bank with 5 or 6 fathoms on it lies to the northward of east of it. A rock, called La Pierre Noire, lies about the meridian of Cape Levi, rather more than a mile, with a shoal to the south side, and a sunken rock on the northern side. Close around the Pierre Noire and the shoal there is from 5 to 6 fathoms; the shoal has only 10 feet water on it.

The mountain above Cherbourg will open above Cape Levi, will lead considerably north of the dangers which lie to the eastward of Cape Levi.

On the western side of Cape Levi is a small cove with good anchorage, in 6 or 7 fathoms, sandy ground.

Cherbourg lies nearly 7 miles W.  $\frac{1}{2}$  S. from Cape Levi. The road is formed by a break water or mole, 2 miles long, founded on sunken cones, intended to render this a secure station for line of battle ships. At each end of this mole is a passage of half a mile wide, and near to its centre a small fort, called Fort Central, on which is a tower exhibiting a revolving light, at intervals of three minutes. Each flash will last 4 or 5 seconds, and will be followed by a short eclipse; a faint light will then appear for  $2\frac{3}{4}$  minutes, and after another short eclipse there will be another flash, &c. This light is 65 feet above the level of high water, at spring-tides, and will be visible in clear weather, at the distance of 3 leagues.

Two miles E.N.E.  $\frac{1}{4}$  E. from the town of Cherbourg, lies the rocky island called Isle Pelee. Two heads of this isle are always above water, and upon one of these two lights are shown, which are intended to serve as a guide to vessels entering between the island and the east end of the dike. There is no passing betwixt it and the land, except at high water, and then only with small vessels; but it may be safely passed on the side next the sea in 5 or 6 fathoms.

The Road of Cherbourg lies directly before the town; the best anchorage is along the southern side of the mole or dike, in 8 or 9 fathoms, at low water. The bottom being fine sand, is good for holding. From the Isle Pelee to Point Querqueville, the distance is about 4 miles; and between is the before-mentioned dike or mole. The N.E. entrance is protected by a fort on Pelee, and the N.W. by another on Querqueville. A fixed light has been established on Point Querqueville to direct a vessel entering by the western passage; by keeping the light S.W. by W.  $\frac{1}{2}$  W., until Pelee Lights appear in a line, when she will be in the direction of the Mole Head, and may thence round to the eastward into the harbour. The water rises in the harbour, on full and change days, about 20 feet.

When approaching Cherbourg, in clear weather, there will be seen at the same time the revolving light on Fort Central, the fixed light of Querqueville, and the two fixed lights at Pelee Isle; but from their different characters and positions, there will be no danger of mistaking them.

A small harbour light, of a red colour, is shewn from a turret on the eastern jetty of the port, at 10 metres (33 English feet) above the level of high water spring tides, which may be seen, in fine weather, at the distance of a mile beyond the two passages into the road.



## SECTION XII.

THE COAST OF FRANCE FROM CAPE LA HAGUE TO USHANT,  
WITH THE CHANNEL ISLANDS.

Cape la Hague, the north-western point of Normandy, is low and sandy, but rises gradually towards the interior. It is skirted by many dangerous rocks on both sides, as well as off its pitch, and breakers may be seen extending nearly a mile from the strand. Of these, the sunken rocks called Senequet d'Amont are the farthest off to the northward—they have as little as 26 feet upon them, with 10 fathoms close to—the mark for which is the house on Burhou Island just open to the northward of the northernmost point in Alderney, Point Grois.

It has been already stated that Cape la Hague is a low sandy point, but at the distance of 3 miles, S.S.W., the coast rises suddenly into a high bluff promontory called Jobourg-nez. There is now a light on a rock off Cape la Hague, and one also on Cape Carteret; the former is fixed, the latter appears and disappears twice in a minute.

The dangerous rocks which skirt Cape la Hague, as well to the westward as to the northward, and the breakers, which may be discerned almost a mile from the shore, will render it prudent for a stranger never to shut in Cape Roselle with Cape Flamanville, unless Ortach, or the Casquets, are open to the northward of Alderney; particularly on a north-eastern stream of tide and a westerly wind. With easterly winds Cape Carteret Guard house may be substituted for Cape Roselle, if clear of les Trepieds. He should endeavour, as nearly as may be, to keep the middle of the passage.

Jobourg-nez forms the northern boundary of the great bight called Anse de Vauville, as Cape Flamanville does the southern boundary. This bay affords good shelter against all winds that blow from between south and north-east, in from 4 to 12 fathoms water, a bottom of fine hard sand, and the only dangers to be feared are les Trepieds, or Huquets. These rocks may be avoided on the western side by keeping Cape Carteret in sight to the westward of Cape Flamanville, or Cape la Hague open westward of Jobourg-nez. As two small rocky knolls, however, have lately been discovered half a mile to the north-westward of les Trepieds, with only 7 and 20 feet on each respectively, it will be prudent, when going through the Race, not to shut in Cape Roselle until clear of the Trepieds, nor to bring Cape la Hague Light, during the night, more northerly than N.E.  $\frac{1}{2}$  N., unless within an hour of high water.

The little port of Dielette lies in the southern part of this bight, about 2 miles from Cape Flamanville. It is best not to anchor within two miles of the beach at low water.

Cape Flamanville is a high bluff point, lying S.  $\frac{1}{4}$  W.,  $8\frac{1}{2}$  miles from Jobourg-nez. Cape Roselle is about  $3\frac{1}{2}$  miles, S.  $\frac{1}{4}$  E., from Cape Flamanville, and Cape Carteret about six miles from the former, S. by W. Between Cape Flamanville and Cape Carteret the land near the shore is high and appears double; and from thence to Regneville it is altogether as low, rising again towards Granville. Coutances Cathedral, about 6 miles inland, is lofty, and rendered remarkable by its two spires or turrets, which occasionally appear like the Reculvers in Kent. There do not appear to be any hidden dangers in the offing between Cape Flamanville and Cape

Carteret, except les Trois Grunes; but from the broad sandy beach between those Capes shallow water extends to the distance of nearly  $1\frac{1}{2}$  mile. The most prominent parts of these shallows are a ridge or shoal, called les Roches du Rit, between Baubigny and the Cape, but nearest the latter, which dries at low water great spring tides, and the Bancs de Surtainville, which break at that period.

Les Trois Grunes is a dangerous rocky ledge, lying about  $3\frac{1}{4}$  miles from Cape Carteret, in the direction of W.N.W.: it is about two miles in length and one mile in breadth, trending north-westerly and south-easterly, and appears at low water great spring tides.

The Ecrehou Rocks lie to the southward of the Trois Grunes, and between the north-eastern point of Jersey and Cape Carteret, at nearly equal distances from both. There are a few scattered huts on the Maitre Isle and Marmotier (the two largest), to which the natives of Jersey resort during the fishing season. From the south-eastern end of l'Ecrevier Bank to the western end of les Dirouilles this ledge occupies a space of 9 miles.

The Ecreviere Bank extends from l'Ecreviere Rock in nearly a south-easterly direction, and to the distance of nearly  $3\frac{1}{2}$  miles; and, at low water equinoctial tides, dries in several different places. Rond-nez Point shut in with Bellehogue Point, or Boulez Guardhouse in one with Tour de Roselle, N.W. by W.  $\frac{1}{2}$  W., will carry you to the south-westward thereof; and when the Marmotier houses appear twice their own breadth open to the north-eastward of le Bigorne N.W.  $\frac{1}{4}$  N., you are to the eastward of its south-east extreme.

The Bigorne is a remarkable horned rock, about half a mile to the south-eastward of the Marmotier, and never covers.

Nearly midway between the Ecrehou Rocks and Cape Carteret is a ridge of coarse sand and shingle, called les Bancs Félés, which dries in three places at low water great spring tides. It extends south-easterly upwards of 5 miles. It is half a mile wide, and remarkably steep, both on its eastern and western sides. Pleinmont Point (Jersey) open to the southward of the Maitre Isle, W.N.W.  $\frac{1}{2}$  W., and a remarkable square green patch in the white sands, or Dunes, de Hatainville in one with the pitch of Cape Carteret, are the marks for the southern extreme of this bank, and Montorgueil Castle in one with the Maitre Isle S.W. by W.  $\frac{1}{4}$  W., is the mark for the northern part thereof.

There is a channel between the Félés Banks and the Ecrehous, and also between it and the French coast: the water is much deeper in the former than in the latter, but the last is the usual passage, and is to be preferred to the first.

Cape Flamanville in sight to the westward of Cape Carteret, N.  $\frac{1}{4}$  E., will lead over the south-eastern tail of the Bancs Félés; but it must be gradually opened out as you proceed to the southward for the same reason. Cape Roselle in sight to the westward of Cape Carteret will lead nearly midway between le Bœuf and the foul ground westward of le Senequet; but Cape Roselle is not always well defined, being confused with the land behind it.

When in the vicinity of Bœuf and the Senequet you will, as you advance to the southward, see the bluff point 6 miles to the southward of Granville, called le Bec de Champeaux, which is to be kept just in sight to the westward of the high land whereon Granville stands, S.  $\frac{1}{4}$  W.; this will lead between la Mariée and le Ronquet Rocks, and also clear of all danger, until nearly as far as la Catheue; whence, if you intend to pass between the Chausey Islands and Granville, you must look out for the remarkable Trees which stand on Mount Huchon, about 2 miles to the north of Coutances, and not bring them in one with Agon Church until la Petite

Canue at Chausey appears in one with les Huguenans about S.S.W.; this latter mark will lead you to the westward of la Catheue, a dangerous reef upon the northern extremity of les Bancs de Montmartin, some of which shew themselves at low water. To the westward of the Bancs de Montmartin the water deepens to 5 fathoms; and when the Point de la Tour opens to the southward of les Huguenans, N.W. by W.  $\frac{1}{4}$  W., you must haul up for it, in order to avoid the Banc Haguet, or anchor to wait for water, if bound into Granville. At the early period of two hours flood, there will be 11 feet water over la Catheue, le Founet, and les Bancs de Montmartin. Le Founet is the most eastern rock of the Group at Chausey, and shews a little before low water.

The navigation in the vicinity of Granville at the period of low water is very difficult and dangerous, in consequence of the numerous banks and knolls of sand which bar its approaches. There are twenty-two of these banks in all. When bound into Granville, bring the Magazine which stands on the south-east end of the new Mole in one with the east end of the Garrison-wall, and giving the Mole Head, when rounding it, a berth of a ship's length only. A vessel drawing 10 feet water must not attempt to round the Mole Head until four hours flood.

Le Loup Rock, on which there is a pole, covers at half-flood, at which period there are not more than 14 feet at the New Mole Head, nor more than 6 feet within it. Le Cocaleux is a small bank of sand and gravel, about  $1\frac{1}{2}$  miles to the north-west of the light-house, and dries at low water; between it and the light-house there are several small rocky heads, three of which occasionally dry. Between le Cocaleux and le Tombelaine there are 3 fathoms at low water.

The lighthouse stands on the extreme western end of Granville peninsula, and may be seen, in clear weather, three or four leagues.

Le Banc de la Rondehaye lies nearly in the centre of Cancale Bay, on the north-western end of which there is a rock with only 8 feet water upon it, and there is still less water on its south-eastern part.

Le Banc Breton lies in the heart of the bay, between Cancale and Champeaux, on the shoalest part of which there are only 6 feet water.

The roadsteads most free from the irregularities with which the ground along this coast abounds, are those of the Anse de Vauville. Ciotat, Port Bail, St. Germain, and Regneville; but the three latter can be used by small vessels only, as there are not more than  $2\frac{1}{4}$  or 3 fathoms in either at low water.

Between Granville and le Grand Herpin, Cancale Bay makes a deep bight, nearly in the head whereof stands the remarkable insulated and lofty rock called Mont St. Michel, which at high water is completely surrounded, but from which at low water the sea recedes to a great distance, leaving it dry for several miles.

There are three detached rocks projecting north-eastward from Cancale Point; of these le Grand Herpin is the most conspicuous: les Filles, which is the outermost, appears at low water.

On the eastern side of the Grand Herpin there is good anchorage in from 7 to 9 fathoms water.

Le Bœuf and les Bœufstins are ledges of dangerous rocks, extending in a south-western direction, and occupying in length at least 4 miles. They are upwards of 2 miles to the south-eastward of les Anquettes, and nearly 6 miles distant from the French shore at high water: they appear at 4 hours' ebb. La Bergerie in one with Seymour Tower, N.W. by W.  $\frac{1}{4}$  W., or Blainville Church four times its breadth open N. of le Senequet, will lead between the Bœuf and the foul patch N. of it; but it is difficult to make out Blainville Church at all times. The spire of St.

Martin's Church in sight to the south of Montorgueil Castle will clear the south-west extremity of the Bœufins; or Blainville Church in one with Coutances Cathedral. The Bœuf appears at four hours' ebb, and the Senequet at two and a half.

The Bœuf and the Anquettes being on all sides beset by a great number of detached dangers, the utmost caution is necessary, when in a large vessel, to navigate with any degree of safety between them, more especially as there exists but one continuous leading mark for the passage, viz., the Church of St. Pierre les Moutiers, on the high land to the eastward of Cape Carteret (apparently in the middle of the village, and the only church so situated), with a very short turret, kept open a quarter of a point to the eastward of the south-eastern pitch of the said Cape, N.E.  $\frac{1}{2}$  N. It will then be also in one with Carteret white church.

The sea to the southward of les Anquettes and le Bœuf, for a very great distance, is much encumbered with sunken rocks, and banks of sand and gravel, having from 4 to 6 fathoms at low water; indeed, between the former rocks and the islets of Chausey scarcely a spot can be found perfectly free from either.

One of these banks lies about 3 miles to the S.E. of La Petite Anquette, with only 14 feet of water upon it, and there are two others again to the S.E. of the former, with as little as 9 and 10 feet upon them. The remarkable trees on Mont Huchon open to the south of the northern sandy point of Blainville river will clear the danger. A rock, called La Mariée, lies 3 miles to the southward of the latter bank. Coutances Cathedral its own breadth open the northward of Agon will lead you to the northward of La Mariée, though close to it; Montmartin Church and Mill in one, S.E. by E.  $\frac{1}{4}$  E., will carry you to the southward of it; La Petite Canue midway between the two Huguenans Islands, S.S.W., will lead you between it and La Cathene; and La Petite Canue in one with La Conchée will carry you to the westward of it. La Mariée shows at half an hour before low water.

The breadth of the ship channel between Chausey Isles and Les Minquiers is very much narrowed by the bank called Les Ardentes, on the eastern, and by the various shoals which branch east and south-east from Les Minquiers on the western side. At low water great spring tides its breadth scarcely exceeds 3 miles in some places. La Grande Canue never wholly covers; but at this period Les Ardentes cannot be considered dangerous, there being even at half tide not less than 16 feet water upon them. Each side of Les Ardentes is steep-to, and there are 6 and 7 fathoms all around and between them.

About  $1\frac{1}{2}$  mile to the south-westward of Les Ardentes lies the south end of a rocky bank, on which there are but 12 feet at low water. This bank trends from thence in a northern direction, is in length  $1\frac{1}{2}$  mile, and has 28 feet water on its northern extremity: nearly midway between the north end of this bank and Les Ardentes there is another rocky ledge with only 21 feet upon it.

About 2 miles to the westward of La Corbiere of Chausey lies an oyster bank, on which there is now as little as 5 and 4 fathoms.

If you intend, therefore, to pass between Chausey Isles and Les Minquiers, and to the westward of Les Ardentes, after the period of half ebb or before that of half flood, you must, after having rounded Les Caux des Minquiers, on any of the given leading marks from St. Aubyn or Grouville Bays, and which you may conclude to have accomplished when Maitre Ile (Minquiers) bears to the westward of W. by N., at which time Agon Church will appear exactly midway between Coutances Cathedral and some remarkable trees, steer towards Maitre Ile until Seymour Tower comes open to the eastward of the new Church of Gouray one-third of the difference

between the said Church and Montorgueil Castle. These directions will lead you between Les Ardentes and Les Minquiers, and between La Corbiere and Les Sauvages, in not less than 24 feet at low water.

Should all or any of the above leading marks be obscured by hazy weather, be cautious, when rounding Les Caux des Minquiers, not to haul to the south-westward to clear Les Ardentes, until Maitre Ile (Minquiers) bears at least W. by N., or to the northward of it, and not to approach the said Maitre Ile nearer than 6 miles at least; and, in order to pass to the westward of Les Ardentes, do not bring La Corbiere of Chausey more to the southward than S.  $\frac{1}{2}$  E., minding, when rounding the western part of the latter island, either to borrow within a mile of the projecting rocks, or to keep at the distance of  $2\frac{1}{2}$  miles from them, in order to avoid the before-mentioned oyster bank. La Petite Canne in one with Le Bec de Champeaux will carry you to the eastward of Les Ardentes in the deepest water. This channel is to be preferred to that between Chausey and Les Minquiers at low water.

Les Minquiers lie between Jersey and the coast of Bretagne, somewhat nearer to the former than the latter, and are very extensive. They are an assemblage of rude, irregular rocks, and connected by ledges of shingle and sand, and beds of mud. A few of these are always above water, viz., the Maitre Ile, Maisons, Calfateurs, Blanc Roque, Rocher du Nordest, and les Faucheurs to the south-westward; the greater part, however, shew at low water, though there are many constantly covered. Maitre Ile, on the eastern part of the ledge, is about 100 fathoms in length and 50 in breadth, and is 72 feet above the level of high-water ordinary neap tides. Les Maisons, situated on the western part of the ledge, are not quite so high, being 63 feet only.

To the south-eastward of Maitre Ile there is a small roadstead or cove, which dries at low water.

There are many temporary anchorages for small vessels, within and among the Minquiers, as well as passages through them at high water, indeed even at half-flood, though very intricate.

The Derée forms another cluster of the Minquiers, to the westward of les Maisons, from which it is detached, and appears at half-ebb, or rather before. The Derée is by no means the western extremity of Les Minquiers, there are several sunken rocks to the south-westward of it, at the distance of 5 miles, two of which shew themselves at low water, and are called la Derée Française, and there are two heads to the north-westward, and one to the westward, at the distance of  $1\frac{1}{2}$  mile, which shew themselves at low water great spring tides also; on the south-eastern side there are also many which occasionally appear.

The Four Rock is on the southern side of Les Minquiers, at the distance of nearly 5 miles, and appears at half ebb. This rock, with Les Rochers du Sud, lying to the north-westward of it, are all extremely dangerous.

When rounding the Minquiers the tides are a most important consideration, and the neglect of them appears to have been the cause of many a loss.

St. Pierre Church kept in one with the White Signal-house on la Moy, or St. Ouen Church in one with or open to the westward of Corbiere Point (Jersey), will carry you at least 3 miles to the westward of all danger in the neighbourhood of the Derée, and in a depth of not less than 18 fathoms water. Bring the Mill of Tertre Morgan, which stands inland to the southward of Cape Frehel, and is considerably elevated, open to the westward of l'Amas de Frehel, the same distance as that huge rock is westward of Cape Frehel Light-house, S.S.W.; this will carry you a mile to the westward of all danger in that neighbourhood; and le Grand

Larron Semaphore, touching the eastern end of Cezembre, S. by E.  $\frac{1}{4}$  E., will clear les Minquiers to the south-westward. Le Grand Larron is a Signal Tower standing among the trees on the heights over St. Servan, and is very conspicuous—there is a semaphore-staff in the centre of it.

- In passing between le Fruquier Aubert and les Anquettes, the same precaution must be used to preserve the leading marks as when passing between Seymour Tower and les Anquettes, because there are three rocky ledges lying exactly in the fair-way of the Channel, two of which are precisely upon the given leading marks, whereon at low water there is not more than 5 and 12 feet respectively. Being in Grouville Bay, therefore, and bound to the south-eastward through this passage, delay to weigh, if possible, till one-quarter flood at least, for then you will ensure 10 feet water over these ledges, calculated for great spring tides. When between les Anquettes and Seymour Tower, bring the conical-shaped promontory of la Coupe open to the eastward of the high point of Verclut N.  $\frac{1}{4}$  W., or St. Catherine Tower in one with Archirondel Tower, N. by W., and run upon either of these inter-sections until St. Pierre church has opened to the southward of Ikhot Tower; you will then be to the southward of the said shoals, and may proceed either for Chausey or the French coast.

Les Caux de Minquiers are very extensive shelves of sand, shingle, and rocks, which are promiscuously scattered in almost every direction between east and north from Maitre Ile; the principal direction, however, is north-eastward, in which position some of the most dangerous exist, and distant from the Maitre Ile nearly 6 miles. The safest and most frequented passage is to the north-eastward of the whole. The northern and eastern boundary of this group is steep-to, having at least 9 and 10 fathoms within half a mile of them.

Various banks and shoals project also in the direction of S.E. and S. from Maitre Ile, to nearly  $4\frac{1}{2}$  miles; the whole extent of the Plateau des Minquiers, in an E. by N. and W. by S. direction, being nearly 16 miles. The most conspicuous mark for the north-eastern ledge is La Tour d'Auvergne in one with Grouville Mill, N.  $\frac{1}{4}$  E., or St. Martin's Church in one with the five Mortella Towers, which stand to the northward of Point la Roque; and Roselle Mill open to the eastward of Seymour Tower will carry you to the eastward of it.

The group of rocks called Les Dirouilles lies to the north-eastward of the island of Jersey, in the vicinity of Les Ecrehous, from which they are distant about 4 miles, and nearly the same distance from La Coupe Point. The channel between them and Jersey is very deep and free from danger at all times of tide. The marks to clear the western extremity of these rocks are, Verclut Point shut in by that of La Coupe, N.  $\frac{1}{4}$  W., or Roselle Mill well open to the westward of Tour Roselle.

There is a reef of rocks on the northern side of the Ecrehous, and wholly detached therefrom, called Le Ruquet, to avoid which be careful to keep Pleinmont Point in sight to the northward of Les Burons des Dirouilles.

The islets of Chausey are an assemblage of little islets and rocks, of different heights and dimensions, extending in almost all directions, and occupying a space of nearly 16 square miles; the principal or largest of them is on the southern side, and may be distinguished by the ruins of a small fort. It lies about 19 miles from La Roque in Jersey, 11 miles from Maitre Ile des Minquiers, and 9 miles from Granville. The anchorage generally resorted to by ships of war is to the south-east of Porte Marie.

The best position for a large ship to anchor outside of Port Marie is with La Tour Beacon on the Grande Isle bearing N. by W., and distant from the shore a

mile, or half a mile, in 7 or 8 fathoms or more, according to the direction of the wind and draught of water. When at anchor, Coutances Cathedral should appear in sight to the northward of Le Grand Huguenant, E.N.E.  $\frac{1}{2}$  E., and l'Enseigne should be seen eastward of Point de la Tour. All the northern shore of this group affords shelter against southerly, south-westerly, and south-easterly winds; it is, moreover, bold, and may be approached without fear.

Nearly N.W. by W. from the old Castle on Chausey, and about 6 miles distant, lies that dangerous cluster of rocks called Les Sauvages, and at the distance of  $9\frac{1}{2}$  miles N.W. by W.  $\frac{1}{2}$  W. from the same fort is La Sonarde. These rocks show at low water equinoctial tides. Le Suhai lies about half a mile to the northward of the latter, but has now 15 feet water over it. You are to the westward of the Sauvages when the church of St. Pierre or La Bergerie comes in one with the Maitre Ile of the Minquiers N.  $\frac{1}{2}$  E. The spire of Granville Church, open to the northward of Chausey Castle S.E.  $\frac{1}{4}$  E., will lead you to the northward of them. Chausey Castle, open to the southward of the Corbiere, will lead you to the southward of them; and the Mill of Terquelé, wholly in sight to the eastward of the high land of Point Meinga, S.S.E.  $\frac{1}{4}$  E., will carry you to the eastward of them; as will also Cancale Church when in one with Haut-bout Windmill. In the passage between Chausey and the Minquiers the soundings, when not interrupted by banks, seem pretty regular. Near to the former isle are 6 and 8 fathoms, and the water gradually deepens as you proceed westward. Close to the south eastern edge of the Minquiers you will find from 14 to 17 fathoms; but from hence you very suddenly shoal to 20 feet in several places and in others to much less.

Between the points of Cancale and Meinga the approaches to the land require great caution, because of the many rocks between those headlands. Of these Les Tintiaux are the principal: they are in length one mile and a half, and three quarters of a mile across, and most of them appear at four hours' ebb.

A rock, with 10 feet upon it, called La Basse Grune, has lately been discovered to the N.W. of Grand Herpin: Granville Church in sight to the northward of the lighthouse will carry you well to the northward of it; Garde Guerin Semaphore in one with La Petite Conchée will carry you a mile to the north-westward of it; Mont St. Michel in one with Le Grand Herpin will carry you to the southward of it, and between it and La Basse du Nid; and Cancale Church open to the eastward of Haut-bout Mill will lead you to the eastward of it.

Basse du Nid lies about one mile and a quarter to the southward of La Basse Grune, and has 18 feet upon it at low water. A rocky patch, called La Rault, has also been found one mile and a half to the westward of the Basse du Nid, and the same distance to the northward of Meinga Point, with 3 fathoms upon it.

When ranging along this part of the coast at or after the dangerous period of half ebb, bear in mind that so long as the lighthouse on Cape Febrel is kept open to the northward of Le Rochefort you will have nothing to fear from the Tintiaux, or from the shoals in the neighbourhood of Cancale Point; and that, if Grand Herpin be kept open, twice its own breadth to the northward of Rochefort, you will pass to the northward of a reef called Le Vieux Banc, and of all other dangers which lie between it and Rochefort.

Le Rochefort lies one mile and a half to the north-westward of Meinga Point: it shews at  $2\frac{1}{4}$  hours' ebb, and stands 34 feet high at the low water of great springs. The Semaphore on Garde Guerin its own length open to the northward of La Grande Conchée will lead you a quarter of a mile to the northward of it; Paramé

Church in one with La Bigne will lead you to the westward of it; and a remarkable tree in the town of Roteneuf in one with the western rocky bluff point of Binar will lead between the Rochefort and Les Hautieux into Roteneuf,—on entering which harbour you must borrow within 30 fathoms distance of Binar Point when passing it. A vessel, however, drawing 10 feet water, cannot enter Roteneuf till three hours' flood.

The port of St. Malo is very difficult of access, being completely barred by shelves of sand and rock, most of which dry at low water. There are, however, many passages leading thereto, the four principal of which are as follow:—La Bigne Passage from the eastward, La Conchée Passage from the northward, La Grande and La Petite Porte from the north-westward, and the Decollé Passage from the westward.

La Bigne Passage is so called from the rock of that name, which lies three quarters of a mile to the north-eastward of La Varde Point, and is always very high above the water. When entering this passage bring the great church of St. Malo in one with La Bigne, S.W. by W., and run in on the eastern side of the Rochefort till within three cables' length of La Bigne; then edge away to the southward, so as to round the latter rock at the above distance. This distance will be further regulated by the south-eastern side of Grand Bey Island being brought in one with the north-western bluff of La Varde Point, but not shut in with it; then steer so as to bring the Mill of Villerenaut to touch the southern side of St. Enogat Church W.S.W.  $\frac{1}{4}$  W. The latter mark will lead you clear of all danger as far in as the outer fort, which is called Petite Bey Fort, and over the Banc de Bey, minding; however, to open the said mill to the northward of the church when passing La Petite Dodehal Rock, and again to bring it on as before when you have passed it, in order to avoid Le Crapaud; and, having rounded the Petite Bey Fort, you may haul to the south-eastward for St. Malo Road. The mark for the Petite Dodehal is the two Semaphores of St. Malo in one.

La Conchée Passage derives its name from a huge rock of that name, with a battery on it, to the eastward of Cezembre. When entering this channel bring the south-west corner of La Cité in one with the middle of Grand Bey Island, S. by W.  $\frac{1}{2}$  W., and passing a quarter of a mile to the eastward of the Conchée, run in this direction between La Platte and Les Pierres aux Anglais, on each of which there is a beacon, until the windmill of Villerenaut begins to appear to the southward of St. Enogat Church. The latter mark will lead you over the bank and between the Crapaud and Petite Bey Fort, having cleared which you may, as before observed, haul south-eastward for St. Malo Road.

The only navigable channels into St. Malo at low water are those of La Grande and La Petite Porte. They both lie to the south-westward of Cezembre Island, and are divided by the rocks called Les Pierres des Portes; but they both unite between Le Jardin and La Savatte, on the eastern rock of which there is a beacon. When entering the channel of La Petite Porte, bring the west end of Cezembre Island in one with the centre of the town of St. Malo, S.S.E.  $\frac{1}{4}$  E., and, having arrived within two miles of the island, steer to the southward, so as to bring the southern corner of the roof of the Caserne at St. Servan in sight to the northward of the north-east angle of the fortifications on La Cité, a remarkable tree will at the same time appear in the opening; this mark will lead you between the Pierres des Portes and La Hupée, between Le Jardin and La Traversaine, and thence all the way up to the road of St. Malo, between Le Buron and Les Clefs des Ouvras, in not less than 24 feet at low water. Two rocky patches have lately been discovered, one to the north-eastward of the Pierres des Portes, and another to the



south-eastward, with only 14 and 12 feet on them respectively, and both somewhat encroaching on the fair-way; at one quarter flood, however, these depths increase to 19 and 17 feet, and to 34 and 32 feet at high flood. So that this leading mark still remains available at tide time. There is a beacon on Le Buron and also on Les Ouvras. The above line of direction, however, borrows somewhat close to the Pierres des Portes on the one hand, and to the beacon on Le Jardin on the other; you should, therefore, open and shut those objects in a trifling degree as you pass these rocks, but not to give a greater latitude than half a cable's length either way. You will be to the eastward of the Traversaine when the Mill of St. Lunaire comes within its own length of Le Haumet; there are only 24 feet water upon La Traversaine at low water. If you intend to enter St. Malo by the passage of La Grande Porte, bring the steeple of St. Enogat Church in one with the eastern side of Haumet, S. by E., and run in with this mark until the two windmills of Petite Paramé are in one with the southern angle of the fortifications upon Fort Royal, S.E.  $\frac{1}{2}$  E.; this will carry you to the southward of the Pierres des Portes; having passed which you must bring the southern corner of the roof of the Caserne in St. Servan in sight to the northward of the fortifications on La Cité as before. No square-rigged vessel of burthen should attempt these channels without a free wind, and recollecting that the course, when within the narrows, is between the S.S.E. and S.E. by S. points of the compass.

The Decollé Passage lies close along the southern shore, between Decollé Point and that of Dinard; its western entrance is between Decollé Point and La Mouillière Rock, on which there is a beacon. The breadth of the entrance at low water does not exceed 50 fathoms. The mark for the centre of the fair-way is Paramé Church and St. Hydeuc Windmill in such a position between Fort Royal and Ile Harbour, as that the church shall appear the same distance to the northward of Fort Royal as the Mill appears to the southward of Ile Harbour. The leading mark for this narrow Pass, according to the Pilot Française, is Le Grand Buzard in one with St. Hydeuc Church. Having passed the narrows, bring the Castle of La Latte in one with a high rock to the westward, called Nerput, and run to the eastward upon this mark between the Petit Buzard and Petit Genillet Rocks, both of which have beacons, until St. Enogat Mill opens to the eastward of the Church, from whence the remarkable house called Bellaire, which has several chimneys and stands elevated in the centre of the town of St. Servan, touching the north-east end of the fortifications of La Cité, will lead into the fair-way of the river, between Les Pourceaux, on which there is a beacon, and Dinard Point.

There are two rocks situated in the road of St. Malo, namely, Le Broutard and Les Pierres de Rance; upon the former are 7 feet, but the latter shews at low water. The best anchorage is between these rocks and the town upon the following marks: Grande Conchée in sight to the westward of Petit Bey Fort, and Fort Royal appearing between Grand Bey Island and the Garrison of St. Malo: here you will never have less water than 30 feet.

The marks for the best anchorage in the road of Dinard, usually called La Rance, are as follows:—Grand Larron Semaphore in one with Solidor Tower, and the Mill of Champfleuri just in sight. The road of Dinard is preferable to that of St. Malo, being sheltered against the prevailing winds, and is the general rendezvous of the ships of war.

The Road of Solidor lies immediately in front of the town of St. Servan, within the Solidor Bank; the water is, however, shallow, and long-heeled vessels take the ground occasionally, the greatest depth being 18 feet at low water. To run into

Solidor Road bring the Tower of Grand Larron in one with that of Solidor, and these objects will lead you between the Point of La Petite Cité and the Solidor Bank; when within the latter you may select a berth, and anchor as convenient.

The anchorage of Les Ebhiens is between Ile Agot and Ebhiens Island, upon which there is a massive watch-tower. In this little port a vessel drawing 10 feet water may secure herself in perfect safety. To run in, bring the Mill of St. Guildo in sight (but only sight, or barely open, giving the rocks and Island when running in a berth of  $1\frac{1}{2}$  cable, but not more,) to the westward of the Guard-house on Point Chevet, and, hauling close round the south-east point of the island, anchor; or if necessary run upon the beach under the watch tower.

Le Vieux Banc is a rocky ledge 4 miles to the north-westward of Cezembre, the south-west part of which appears at low water. Paramé Church in sight to the northward of Petite Conchée, S.E.  $\frac{1}{2}$  S., will lead you to the northward of the Vieux Banc; the same church in sight to the southward of Cezembre, S.E.  $\frac{1}{2}$  E., will carry you to the southward of it; the Mill of St. Guildo in one with the western part of the Isle of Ebhiens, S.W.  $\frac{1}{2}$  W., will lead to the eastward of it; and the Mill of St. Jacut in one with the eastern part of the island, S.S.W.  $\frac{1}{2}$  W., will carry you to the westward of it. This shoal generally betrays itself by rippling.

Le Banchenou lies about 2 miles to the south-west of the Vieux Banc, and directly in the fair-way: it breaks occasionally; but there are never less than 20 feet upon it. St. Jacut Mill in one with Le Tour des Ebhiens, S.S.W., will lead right upon its shoalest part; and you will avoid it by opening the said Mill proportionally eastward or westward of the island.

Les Bourdinots lie about a mile E.  $\frac{1}{2}$  N. off the point of St. Cast, and appear at low water. Grande Conchée well open to the northward of Cezembre, or Tertre Morgan Mill in sight to the northward of St. Cast Peninsula S.E., will lead to the northward of them.

La Baie de la Frenay, between the Castle of La Latte and St. Cast, affords very good shelter against off-shore winds, and excellent holding ground.

La Catis Shoal lies  $2\frac{1}{2}$  miles to the north-eastward of Fort La Latte. The least water upon the Catis is 19 feet. By shutting in Point d'Erqui with Cape Frehel, you will pass to the southward of it; and by opening Point d'Erqui half a point to the northward of l'Amas de Frehel, you will pass to the northward of it.

Le Sauvage is 6 miles to the north-eastward of Fort La Latte, and in the same direction as the Catis. There are never less on this shoal than 29 feet. The same church on with the east end of Cezembre clears it on the north side.

La Trouvée is a rocky ledge nearly 8 miles to the northward of Cezembre Island. There are but  $14\frac{1}{2}$  feet upon this shoal, with deep water all around it.

Cape Frehel bears S.S.W.  $\frac{1}{2}$  W. from Point Corbiere of Jersey, distant nearly 10 leagues; it is high and steep-to, and has a lighthouse standing upon it, the light being 246 feet above high water, and revolving in  $2\frac{1}{4}$  minutes. There is a high rock to the north-west of the lighthouse called l'Amas de Frehel, which is never covered, and serves as a leading-mark in various cases. Between the chateau of La Latte and Cape Frehel the shore is very rugged and precipitous, and nearly due east from the lighthouse is the rock of l'Etendrée, which shows at four hours' ebb, and from which a shallow bank extends three-quarters of a mile to the south-westward.

There are two other rocks off the Fort de la Latte, which break at low water, and which render all approach, within a mile of the shore, very hazardous.

Guernsey is nearly in the form of a right-angled triangle, the north-west side

forming the hypotenuse, the length of which is about 7 miles. The land on the south side is remarkably high and steep; but it gradually lowers towards the north, where in some places it is very little above the level of the sea. The island is encompassed with many very dangerous rocks, the principal of which are the following, viz., the Hanois, the Grunes, the Sambule, on the west and north-west sides; the Brays, with several others, on the north side; and on the east and north-east sides lie the islands of Herm, Jethou, &c., which are also surrounded by numerous rocks and ledges. The town of St. Pierre on the east side of the island has a capacious pier, which is 60 feet in width at the foundation, and in height 35; but, from the manner of its construction, the strong S.S.E. and southerly gales send in a great swell. To the south-eastward of this pier stands the citadel of Castle Cornet, which at low water communicates with the main land.

The Great Road of Guernsey lies in front of the town of St. Pierre, and to the north-eastward of Castle Cornet, and is generally the anchorage of Her Majesty's ships. The ground is excellent for holding, and affords good shelter against all winds, except those between S.S.W. and S. by E., which send in much swell and sea.

About half a mile E. by S., from Point St. Martin, begins the south end of the Great Bank, on some parts of which there are only 10 feet water at low-water spring tides. This bank extends N.E. by N., and is in length  $1\frac{1}{2}$  mile, and half a mile where broadest. The marks for the shoalest part of the bank to the southward are, Val Windmill well open to the westward of Mont Crevil Tower, and a remarkable white House over Fermain Bay, touching the south side of Beequez Guard-house; and the marks for the shoalest part to the northward are the white Watch-house on the south pier-head just open to the southward of Castle Cornet, and Val Windmill in one with the eastern side of Mount Crevil Battery. Mount Crevil Battery joins the Tower.

The Little Road of Guernsey lies to the northward of Castle Cornet, and between it and the rocks called the Blanche and Sardrette, on both of which are placed beacons. This road is invariably used by traders and small vessels, and affords excellent shelter in from 2 to 4 fathoms (fine muddy sand with seaweed) from almost all winds that blow; that from the N.E. by E. being deemed the worst, as occasioning a greater pull between three-quarters flood and half ebb, at which latter period the Sardrette, Gobeau, and Blanche rocks (as well as the rocks in the vicinity of the Little Russel) begin to break.

There are several very dangerous rocks in the vicinity of Castle Cornet which ought to be carefully avoided,—namely, Les Tremies and Les Boués du Nord to the north-east, l'Hutrier to the south-east, Le Ferico east, and Le Moulinet to the south-west. The Ferico lies more than a quarter of a mile from the castle, and is, consequently, right in the fair-way of vessels bound into the Little Road from the southward. The mark to clear all these rocks on the eastern side is the tower of Hogue à la Pere open to the north-eastward of Gobeau Beacon N.  $\frac{1}{2}$  W. Be careful when rounding Castle Cornet on the N.E. side, for the Little Road, not to haul to the westward until the town church is within a sail's-breadth distance of the watch-house on the south pier-head, by which precaution you pass to the north-eastward of the Boués du Nord.

The stream in the Great Road sets nearly straight through both ways, the flood running N.E.  $\frac{1}{4}$  N., and the ebb S.W.  $\frac{1}{4}$  S. by compass. The tide called flood, between the island of Guernsey and the rocks which project from the S.W. end of Jethou, assumes two different courses. One arm thereof runs directly through the Great Road, and thence into the Little Russel. Another, branching off at right

angles nearly from the former, runs to the eastward towards Jethou, and through the before-mentioned rocks into the Great Russel. The tide called ebb runs directly the reverse; the stream from the Great Russel uniting with that in the road, after it has passed the rocks at Jethou, from whence they both set to the south-westward.

The tide in the Little Road from half-flood till half ebb sets E. by N., and from half ebb to half flood W. by S. It is high water, full and change, at Guernsey and Sercq at half-past 6 o'clock, and the water rises on equinoctial spring tides 31 feet perpendicularly, though during the neaps not more than 14 feet.

The Island of Herm lies three miles E. by S. from Guernsey Pier, and, with Jethou, divides the Great and Little Russel channels from each other. These islands are surrounded by a great number of rocks and ledges, some of which are always above water. The channels between the islands and rocks are extremely intricate, and rendered dangerous by the rapidity and the variety of the tides. Half a mile south-westward of Herm lie the little islands of Jethou and Crevichon, the former being attached to the latter by a shingle causeway, which is covered at half-flood. There is a very good anchorage between Herm and Jethou, where a small vessel may ride secure from all winds but those which blow from between south-west and east. The best entrance thereto is from the Great Russel. The dangers to be apprehended in going into this anchorage are Les Fourgues, a patch of sunken rocks to the north-eastward of La Goubinière, in the Great Russel, and further in the Mulet on the starboard hand, and the Tinker on the larboard. The Mulet lies about half a cable's length from the south point of Herm Island, and the Tinker about twice that distance to the eastward of Jethou. There is one great convenience attending this anchorage, viz., that the tide runs nine hours to the southward, and only three hours to the northward.

The Great Russel Channel lies between the Islands of Herm and Jethou to the north-west, and the Island of Sercq to the south-east. It is the eastern passage to Guernsey, and is above 2 miles in breadth, and very easy of access even to strangers. The course to it from the middle of the Race of Alderney is W.S.W. nearly, distant 7 leagues. In proceeding, however, towards this channel from the north-eastward, great care must be taken with a large vessel to avoid the Banc de Chole, which lies nearly in the direct line between the Race of Alderney and the entrance to the Great Russel. The bank extends N.E. and S.W., nearly 6 miles in length, and has barely 10 feet water on its shoalest part at low water equinoctial tides. The mark to avoid its south-western end is Jerbourg Tower in one with La Fauconnière, on which there is a beacon, W.  $\frac{1}{4}$  S.; and to avoid the north-eastern end, Jerbourg Tower just open to the northward of the northernmost high land on Herm Island, W.S.W.  $\frac{1}{4}$  W.

Having arrived at the entrance of the Great Russel, you will perceive a rock on the western side of the channel, called La Noire Pute, lying about a mile south-eastward from the Mill on Herm Island, of which you must pass a full quarter of a mile to the southward. When abreast of the Noire Pute bring St. Martin Point, (the south-eastern part of Guernsey) a quarter of a point open to the southward of a remarkable large rock, which lies half a mile S.S.W. from Jethou, called La Goubinière, W.  $\frac{1}{4}$  S. This mark will carry you to the southward of Les Bouillons and Les Fourgues, which are the only dangers to be apprehended between the Noire Pute and the Goubinière. Noire Pute is never wholly covered. When the white Watch-house, on the south pier at Guernsey, comes open to the southward of Castle Cornet, or until St. Martin's Church steeple, seen over the trees, appears over the middle of Fermain sandy beach, will lead you to the southward of Le Sardrière

and Les Têtes d'Aval; after having rounded which, you may boldly steer for the road.

The thwart-mark for Le Banc des Anons is Mont Crevel Tower, (white) in one with the eastern side of a remarkable high rock, lying half a mile W.S.W. from Jethou, called La Grosse Ferrière, N. by W.  $\frac{1}{4}$  W. There is a very good channel to the north-eastward of the Têtes d'Aval, between them and the Ferrière, the leading marks through which are the Noire Pute in one with the Goubinière, E.N.E.  $\frac{1}{4}$  E. and the town Church Spire directly over the southernmost angle of Castle Cornet, N.W. This passage, however, being narrow, should not be attempted by a stranger.

In turning through the Great Russel you may approach the Island of Sercq, when standing to the south-eastward, within half a mile. Off the west side of Brecqhou there is a sunken rock, La Veste. To the south-westward of Brecqhou, and between it and Sercq, are the rocks called Les Dents and Les Hautes Bouées, lying nearly a mile from the land; the former appear at half ebb, and the latter at low water. About  $1\frac{1}{2}$  mile to the westward of Brecqhou lies a sunken rock, called La Grune, over which there is never less, however, than 36 feet water. When standing to the northward towards Herm and Jethou, you must not shut in St. Martin Point with the Goubinière (when to the eastward of the latter rock), but always keep it a quarter of a point open to the southward thereof, by which precaution you will avoid the Fourgues and the Bouillons.

The north-eastern stream of tide slacks half an hour sooner on the south-eastern side of this channel than on its north-western side.

The Little Russel channel lies on the north-west side of Herm Island, and between it and Guernsey, and is much contracted by the numerous rocks which project off from both islands, as far out as Le Roustel and La Rousse, and is little more than 3 cables' lengths. On the Rousse there is an iron beacon. The entrance to this channel from the northward is between the rocks called Les Brayes on the western side, and Les Anfroques on the eastern. The approach to the Brayes, as well as to Anfroques, is exceedingly dangerous, as well on account of the tides as for the numerous hidden and other rocks by which they are encompassed. The mark to clear the Brayes, and all danger to the eastward and south-eastward of them, is the south-western end of Little Sercq a little open to the eastward of the low north-eastern sandy point of Herm Island, S.  $\frac{1}{2}$  E., and this mark will lead you into the fair-way of the channel. The mark to avoid the Plat Boué and the Boufresses, and all danger to the north-westward and westward of them, is Catel Church (the spire of which is whitened) a quarter of a point open to the westward of Val Castle, W. by S.; and when the north-eastern end of Sercq Island comes on with the middle of Grand Anfroque you are abreast of Plat Boué. The above mark will also lead you into the fair-way of this channel.

St. Martin Point just opening to the westward of Brehon Beacon, bearing S.W.  $\frac{1}{2}$  W., must be considered as the best leading mark to the entrance and through the fair-way of the Little Russel. This mark will lead you in from sea and carry you through between the Roustel and the Rousse. There is a black buoy moored about 10 fathoms to the S.W. of Roustel, and a beacon on the range of rocks called Platteroque, to the W. of Roustel, with a basket on its summit. When the north-east end of Sercq Island begins to shut in with the northernmost bluff land of Herm Island, you are abreast of the former rock as well as the latter. Le Roustel is the most dangerous rock in the Little Russel; it lies exactly in the mid-channel, and does not appear until four hours' ebb. There is another dangerous sunken rock lying E.N.E. from Roustel, 50 fathoms distant. There is also a rock 30 fathoms W. by

N. of the Rouse. Having passed the Rouse and Les Bouées Genettales, upon the above leading mark, bring the south-eastern end of Longou Pierre (which is 2 miles to the north-eastward of the Rouse, always high above the water,) a quarter of a point, but not more, open to the south-eastward of the Rouse, E.  $\frac{1}{2}$  N., by which you will pass between La Grune au Rouge (on which there is a red buoy) and Le Brehonnet, that is, to the eastward of the former and to the westward of the latter. Longue Pierre open to the south-eastward of the Rouse, until Crevichon appears open to the southward of Brehon Beacon, S.E.  $\frac{1}{2}$  S., you are then clear of the Grune au Rouge, and should steer directly for St. Martin Point until the town Church opens to the southward of the white Watch-house on the south pier-head, W.  $\frac{1}{4}$  N., by which course you will pass to the eastward of Les Trois Grunes and Le Boué Agenor, and may thence run either into the Great or Little Roads. To pass to the northward of the Grune au Rouge, bring Longue Pierre a quarter of a point open to the north-westward of the Rouse, and keep that mark on until Val Windmill appears touching the western side of Mount Crevel Tower (white), N.N.E.; this latter mark being kept on till the town Church opens, as before directed, will lead into the road, to the westward of the Trois Grunes and the Boué Agenor, and to the eastward of the Fruquiers and the Beffée. The utmost circumspection must be used, on nearing the Roustel, not to bring Le Brehonnet (a half-tide rock close to the westward of the Brehon) on with St. Martin Point when standing to the westward, nor to bring the Brehon on with that point when standing to the eastward. These rocks lie between Brehon and the Rouse, and may always be avoided by keeping St. Martin Point a quarter of a point open to the westward of Brehon Beacon or Pyramid.

Vessels proceeding round the north-west side of Guernsey should not approach it nearer than 3 miles at least, there being several very dangerous ledges of rocks there.

The Hanois, or Hanoveaux Rocks, lie off the south-western point of Guernsey, their western extreme being  $1\frac{1}{2}$  mile from Pleimont Point in the direction of N.W. In rounding these rocks give Pleimont Point a berth of at least 3 miles, in order to avoid the sunken rocks which stretch off therefrom, in the direction of N. by E., called *Les Bissets*. Having rounded these truly dangerous rocks, which you cannot safely be deemed to have done until the Corbiere, or Point la Moye, appears open to the southward of Pleimont Point, S.E. by E.  $\frac{1}{4}$  E., steer S.S.E., minding to keep the west end of Lihou Island in sight to the westward of Pleimont Point until the Mill on Great or North Sercq opens to the southward of Jerbourg Point, the apparent distance between it and the isthmus of Sercq, E.S.E.  $\frac{1}{2}$  E., in order to avoid not only Pleimont Ledge, which lies one mile to the southward of Pleimont Guard house, but also Les Lieusses. This latter mark will carry you to the southward of all dangers on the south side of Guernsey, to the westward of Point la Moye. Les Grunes de Jerbourg are a very dangerous cluster of rocks a full half mile from the shore, and in the direction of south west from St. Martin Point.

The dangers to be apprehended to the eastward of Point St. Martin are, La Longue Pierre de St. Martin, La Gabrielle, and La Grue de Creux, as well as the shoal part of the Great Bank. Longue Pierre appears at one-quarter ebb, and the Gabrielle at low water ordinary spring tides, at which period there are only 14 feet on the shoal part of the Great Bank.

You may anchor anywhere on the south side of Guernsey with the wind along or off the land, for the purpose of stopping a tide only, provided the north end of Sercq Island is kept in sight to the southward of St. Martin Point.

There are but few bays or harbours in any part of Guernsey which are capable of receiving vessels of a greater draught of water than 9 feet, and into those a stranger would find the utmost difficulty in entering.

Petit Port lies between Jerbourg and Icart Points, and affords good shelter against easterly, northerly, and north-westerly winds, in from 5 to 9 fathoms, bottom of fine clean sand.

St. Samson Harbour lies on the eastern side of the island between Val Castle and Mont Crevel, but vessels lie aground at low water. It is exceedingly difficult of access, by reason of the rocks.

Bourdeaux Havre is to the northward of St. Samson, but used only by fishermen.

The streams of tide in the Great and Little Russels set straight through both ways, according to the trend of their respective channels, and run five hours and a half on each tide, allowing better than half an hour for high and low water slack. In the Great Russel the flood-stream runs E.N.E.  $\frac{1}{4}$  E., and the reverse with respect to the ebb: in the Little Russell, N.E.  $\frac{1}{2}$  E. nearly, and the reverse on the ebb. At the north-eastern mouth, however, of the Little Russell, between the Brayes and the Anfroques, the tide assumes the direction of that in the offing, viz., the first two hours of the flood sets directly for the north end of Herm Island, gradually joining the south-western stream in the Russel, and the last hour of the flood, as well as the first of the ebb.

The stream of tide on the north-western coast of Guernsey,  $3\frac{1}{2}$  miles N.W. by W. from the Grunes du Bois, begins to set to S.S.W.  $\frac{1}{4}$  W. at low water, and continues to run in that direction, gradually veering to the southward and eastward until one quarter flood, when it sets S.S.E.  $\frac{1}{4}$  E., and thus continues until half-flood, at which period it veers to S.E. by E.  $\frac{1}{4}$  E., and runs until three-quarters flood, after which it runs N.E. by E.  $\frac{1}{4}$  E. until high water.

No eastern inclination of the tide is perceptible on the southern side of the island, between Pleinmont and St. Martin Points, until the water has risen two hours by the shore; it then begins to run along the land S.E. by E.  $\frac{1}{2}$  E. as far as St. Martin Point, where, meeting with the last hour's ebb from the Great Road, they unite and set S.S.E. and S.E. for one hour, or until half-flood, when the tide veers to the north-eastward, and sets directly through the Great Russel with considerable strength. At the same time that the tide begins to run along the southern shore of Guernsey it also sets through between the island and the Hanois Rocks, into and through Rocquaine Bay. The tide between Lihou Island and the main is exceedingly rapid, and the bridge there is covered at  $2\frac{1}{2}$  hours' flood.

It must be remarked, that although the stream of tide begins to set through the Little Russel at the same time that it does in the Great Russel, viz., half-flood, yet there is no northern inclination round St. Martin Point until four hours' flood; care must, therefore, be taken that the first of the eastern tides does not draw you into the Great Russel, or among the rocks in the vicinity of the Têtes d'Aval.

The tide in the vicinity of the Grand Braye is subject to still greater varieties and inequalities. N.N.W. therefrom, at about 2 miles distance, from low water until one hour flood it runs S.S.W., from one to three hours S.S.E., from half-flood to four hours' flood E., from four hours until five hours' flood E.N.E., from five hours' flood until half-ebb N.W., from half-ebb till five hours' ebb W., and then S.W. till low water again. On the north-eastern side of the Grand Braye, at one mile distant, from five hours flood until half ebb it runs N.W., and from half-ebb till low-water W. by N: The courses of the tides, 2 miles N.E. of the Grand Anfroque, are as follows: from low water until one hour flood, variable between the

S.W. and S.E., from one till two hours' flood, S.E., from two till three hours' flood, N.E., from three till five hours' flood, N.N.E., from five till high water, N.N.W., from high water till two hours' ebb, N.W., from two hours' ebb till half-ebb, W.S.W., and from half-ebb till low water, S.W.

The tide on the north-western shore of Guernsey within the rocks called Les Saut Roquiers, l'Etat, &c., and between Libou Isle and the Grand Braye, begins to drain down along the land to the south-westward half an hour before high water, gradually increasing in strength, and sets in that direction with little variation during the whole of the ebb, and until 2 hours' flood again, when it veers and sets to the north-eastward until half an hour before high water as before; so that there are 8 hours south-western, and only 4 hours north-eastern tide. The tide in Rocquaine Bay sets to the north-eastward from 2 hours' flood until half an hour after high water, when it slacks and remains so for three hours or until half ebb; it then runs down to the south-westward, and so continues until 2 hours' flood, when it again sets to the north-eastward.

The tide to the southward of Les Hanois, and W.  $\frac{1}{2}$  S. one mile from Pleinmont Watch-house, begins to run S.S.W.  $\frac{1}{4}$  W. at low water, and so continues until 2 hours' flood, when it sets S.E. by E.  $\frac{1}{2}$  E. along the southern shore, as was before observed. From one-quarter ebb until three-quarters ebb it sets N. by W.  $\frac{1}{4}$  W., and from three-quarters ebb until low water, W.  $\frac{1}{2}$  S. The stream to the north-westward of the western Hanois Rock, at a mile distant, begins to run S.S.W.  $\frac{1}{4}$  W. at low water, and so continues until 2 hours' flood, when it veers to the E. by N., and sets in that direction with very considerable strength until a quarter ebb. From one-quarter ebb until three-quarters ebb its set is N.N.W., and from that period, W.S.W. until low water again. The tide in Grand Havre sets directly in and out, the flood running in S. by E. for 6 hours, and the ebb N. by W.

The island of Sercq lies to the eastward of Guernsey, and divides the Great Russel from the Deroute Channel. It is lofty in all its extent, and is in length, including Little Sercq, to which it communicates by an isthmus, or very narrow causeway (called La Coupée), about  $2\frac{1}{4}$  miles, and rather more than  $1\frac{1}{4}$  where broadest. The little island of Brecqhou lies on the western side of the island, from which it is separated by a narrow channel. The approach to Serque on the north-eastern, eastern, south-eastern, and south-western sides, is difficult and hazardous, by reason of the numerous rocks which encompass it, as well as by the rapidity and irregularities of the tide in its immediate vicinity.

Nearly E.S.E., about a  $\frac{1}{4}$  of a mile from the Creux, lie the rocky islands called Les Burons, between which and the island is the passage called Le Goulet, which dries half-way across at low water spring tides; the deepest water being towards the island. Le Blanchard lies to the eastward, about 2 miles from the island; it never appears but on spring tides. The Sardrière Rock has never less than 7 fathoms over it.

There is a very good anchorage on the north-eastern side of Sercq, in from 17 to 19 fathoms water, fine clean sand.

Baleine Bay lies between the Baleine and Conchée Rocks, and affords excellent anchorage in from 4 to 7 fathoms water, with sand, fine gravel, and pieces of various sorts of shells, sheltered from all winds that blow from between N.N.E. and W. The only dangers which infest this bay are Les Têtes de Conchée, La Gripe, Les Vingt Clos, and Le Balmie, the former of which have never less than 30 feet over them. La Gripe lies right in the fair-way of the entrance. La Conchée stands about half a mile south-westward of the Burons; it is always above water, and



steep-to on its south-eastern, eastern, and north-eastern sides. The Balmie is considerably within and to the westward of the Gripe, and, as it appears at a quarter ebb, is of course to be feared only until that period. Les Vingts Clos lie 4 cables' length to the southward of the Balmie, and between it and l'Etat de Sercq.

La Grève, or beach, is the name given to an anchorage on the north-eastern side of Sercq. It affords good shelter for small vessels from south-westerly and westerly winds, in from 6 to 9 fathoms water; but the ground being sand and rock, the anchor is frequently apt to come home.

There are two entrances to this anchorage, viz., one from the northward, between the island and the Noire Rock, and one from the southward, between the island and the Grand Moie, which is very narrow.

The anchorage in Banquette Bay affords very good shelter against easterly, south-easterly, and southerly winds, in from 5 to 16 fathoms water; coarse sand interspersed with small black stones and pieces of sea-weed.

The name of La Grande Grève, or great beach, is applied to another bay which lies on the south-western side of the island, between Brecqhou and Little Sercq, but which is much contracted by Les Dents, Les Hauts Bouées, Les Baveuses, &c. It affords shelter from S.S.E., E., and N.E. winds, in from 7 to 11 fathoms water, fine sandy bottom, with pieces of shells. Should a vessel be unavoidably caught by a westerly wind while riding in this bay, she should immediately endeavour to get out, either to the westward or through the Gulion Passage, which latter may with confidence be attempted at half flood.

The tides in the immediate vicinity of Sercq are subject to a great variety of courses during the twelve hours, their direction being governed by the peculiar figure of that island. On its north-eastern side there is a tract of water, in which a perpetual eddy, or slack tide, exists during the six hours that the stream occupies in running to the north-eastward in the Great Russel and the Deroute channels, extending nearly 3 miles from the land, and gradually contracting in breadth as it increases its distance therefrom. The streams of tide in Baleine Bay, in Terrible Bay, and in the neighbourhood of the rocks called La Conchée, Baleine, Balmie, &c., run eight hours and a half to the N.E. by E., and only three hours and a half to the south-westward.

The streams of tide on the north-eastern side of Sercq, in La Grève Bay, and in the neighbourhood of the rocks called the Grand and Petit Moie, &c., run eight hours and a half to the S. by E., and only three hours and a half to the N. by W. The southern stream commences at four hours' flood, and runs until half an hour after low water, when the northern stream commences and runs faintly for the remaining three hours and a half, or until 4 hours' flood again. The southern stream above-mentioned, on the north-eastern side of Sercq, and the northern one on the south-eastern side, branch off to the eastward of the Burons, where they meet and unite with the Deroute stream, which sets directly both ways, and runs for equal spaces of time.

The stream of tide on the north-western side of Sercq begins to run to the southward at the Bec du Nez, and thence along the land towards the Isle of Brecqhou at three-quarters' flood, near which it meets with the stream of tide from the Gulion Passage; which latter, prevailing over the former, carries it circuitously into the Great Russel to the north-westward, where it unites with that regular stream. The stream begins to run to the north-eastward along the shore from the Moie de Gulion, towards the Bec du Nez, at three-quarters ebb, and so continues until three-quarters flood again. The stream on the south-western side of the Sercq, in the neigh-

bourhood of the rocks called the Bretagnes, Hautes Bouées, Sercquier, &c., runs  $4\frac{1}{2}$  hours to the northward, and only one hour and a half to the southward; the former stream commences at half flood and runs for one hour; it then suddenly turns and runs to the south-eastward for one hour and a half (or until half an hour before high water by the shore), at which time it again as suddenly veers to the northward, and sets in that direction for the remaining three hours and a half, or until half ebb.

The tide in the Gulion Passage runs for equal spaces of time, similar to that in the Great Russel.

The Isle of Alderney is only  $3\frac{1}{2}$  miles in length from east to west, and little more than one mile where broadest, which is at its south-west end. It trends nearly E.  $\frac{1}{2}$  S. and W.  $\frac{1}{2}$  N., and the Telegraph Hill is 276 feet above the level of the sea. The north-eastern extremity lies N.W. by W.  $\frac{1}{2}$  W. from Cape la Hague in Normandy, from which it is distant  $8\frac{1}{4}$  miles. The approach to this island on all sides, except the north, is rendered extremely difficult and dangerous, from the numerous rocks with which these quarters are infested, some of which are under water; and these dangers are greatly augmented by the peculiar set and velocity of the tides. Among the rocks to the north-westward are Le Burhou, l'Ortach, Le Renouquet, La Verte-Tête, Les Nannels, &c. To the southward are Les Etats, Les Noires-Putes, Le Coquelicot, Le Boni, and l'Etart. To the north-eastward are Les Hommeaux Florains and Le Hommet-Herbier, from which projects that very dangerous reef, called Brinchetais, and outside of which is the Blanchard. The tide runs over all these rocks with great rapidity.

Alderney possesses but two small harbours; one of which is on the south-eastern side, called Port Longy, and the other on the northern side, called Braye, both whereof dry at low water neap tides. The latter harbour is the principal place of resort at present, and is furnished with a stone pier; but it affords very poor shelter in boisterous weather.

The Road of Braye lies immediately before the lower town: it has a fine sandy bottom, with from 5 to 10 fathoms water, though it is seldom used but as preparatory to entering the pier. It certainly is not safe to remain at anchor there during the winter, on account of the run or ground-swell, which often comes in very unexpectedly, and without any apparent warning; nor can a vessel, if surprised there with a northerly wind, easily beat out, both ebb and flood heaving her in. The dangers to be apprehended in Braye Road are, La Bouillonnaise, La Grande Braye, three sunken rocks to the eastward, a half-tide rock to the south-eastward, and the Bouée de Braye, which latter appears at low water spring tides only. The eastern Mill, which stands on the heights to the eastward of St. Anne, in one with the Pier-head, will lead you to the eastward of all the former, and to the westward of the latter.

The best marks for anchoring in Braye Road, should such an event be absolutely necessary, are, during a westerly wind, with the Mill on the heights to the eastward of St. Anne in one with the Pier-head, and the Nannels Rock open to the southward of the Grande Braye Rock, in from 5 to 6 fathoms water; and, with an easterly wind, the Nannels rock open as before, and the same Mill a point open to the eastward of the Pier-head: in either of these positions you will tail clear of danger, with a scope of 80 fathoms of cable. The bottom is fine clean sand. The Grande Braye Rock is seldom wholly covered, though often awash at  $5\frac{1}{2}$  hours' flood, as well as Bouillonnaise. The thwart-mark for these two rocks is the eastern Mill touching the eastern side of the Watch-house at Braye.

Fronting Port Longy there is an islet called Le Hommet de Longy. The en-

trance to this port is not more than 200 fathoms in breadth, with a rock right in the fair-way, which dries at low-water great spring tides, and, as both ebb and flood set violently across the harbour's mouth, it is very difficult as well as hazardous to attempt.

There is an outer anchorage to the westward of Port Longy, another to the south-westward of Les Noires-Putes, and a third to the south-westward of Les Etats, called Le Fossé Malieres. The first affords good shelter for a small vessel against north and northwest winds, in from 10 to 16 fathoms water, sandy ground mixed with rock and pieces of shells; the inner part of the Hommet de Longy open to the southward of the Queslingue, and about half-way between that Rock and l'Etart, at the distance of 150 fathoms from the shore. In approaching this anchorage care must be taken to avoid the Boni, a dangerous rock, though of small extent, which lies to the southward of l'Etart, and almost half a mile from the shore. It appears at low-water spring tides, but has from 10 to 14 fathoms close round.

The second and third anchorages are sheltered from easterly winds, in from 5 to 12 fathoms water, coarse sandy ground. The mark for the second is the Noires-Putes Rocks in one with the Government Telegraph, and your vessel to be distant from the Noires-Putes 400 fathoms. The mark for the third is the south-western Head of la Clanque, just open to the south-westward of Les Etats; your vessel to be distant from Les Etats 400 fathoms.

About one mile and a half from the west end of Alderney lies the rocky islet Burhou. The only safe landing-places are, one the north, and one on the south side; but at either much difficulty is created by the surf. Between Burhou Island and Alderney is the channel called la Passe du Singe. The narrowest part of this channel, which is between the island Burhou and the Corbet Rock, is scarcely three-quarters of a mile from side to side.

In approaching Alderney the tides must be carefully considered, and a vessel bound thereto should endeavour to reach it so as to get into the pier without anchoring, and on a rising tide between half-flood and high water. In running from the southward for Alderney, and intending to go through the Passe du Singe, steer for the south-western end of the island, minding to keep the north western Head of the Clanque within its own breadth of the western side of Les Etats, bearing N.E.  $\frac{1}{2}$  E., by which you will pass to the eastward of a very dangerous rock called La Pierre au Vrach, over which the tide of ebb as well as flood sets very strongly, as well as counteract the strong indraught of the tide between Ortach and Burhou, which, from half flood till half ebb, branches off between the Pierre au Vrach and Ortach, and sets directly through the rocks in that part with great strength. The mark for the Pierre au Vrach is the south-eastern Head of the Clanque in one with a small stone Beacon on the adjacent heights of Alderney, bearing E.  $\frac{1}{2}$  N.; the same Beacon in one with the north-western Head thereof will clear it on the north-western side above four cables' lengths; and the same Beacon open to the southward of the south eastern Head thereof, the apparent breadth of the three heads will clear it the same distance on its south-eastern side. La Hogue Windmill in one with the Government Telegraph Tower will also carry you more than half a mile to the southward of the Pierre au Vrach, and by shutting in the new lighthouse on Cape la Hague with the island of Alderney, you will pass to the northward thereof, though close. This rock, lying one mile and three-quarters nearly from Ortach, and the same distance from the Etats, it is right in the fair-way of the entrance to the Passage du Singe, and is only to be seen at low water

great spring tides. It is in form, size, and appearance like a small boat, and close to it all round there are 16 fathoms water. Having passed Les Etats, the next danger to be apprehended is the Corbet Rock, between which and Les Etats lie the Barsier and Cariole.

When abreast of the Corbet, bring the eastern end of Braye Beach, called Roselle Bay, just open to the northward of Cape Grosnez, S.E. by E.  $\frac{1}{4}$  E., by which you will pass without or to the northward of Les Jumelles. Having reached the length of Les Jumelles bring the red-tiled Guard-house, called Le Grand Monize, which stands on the extreme of the island, its own apparent breadth open to the northward of Bibette Head, S.E. by E.; this mark, should the Grande Braye be covered, will carry you to the northward thereof. In rounding the Grande Braye to the eastward allow a berth of two cables' length, and when the Mill, which stands on the heights to the eastward of St. Anne, appears in one with the pierhead, S. W.  $\frac{1}{4}$  S. you are to the eastward of it. Having passed the Grande Braye, and bound into the pier, run in with the latter marks in one, until Ortach begins to shut in with Point Grosnez; you will then discover the small iron beacon on the western side of the entrance, in rounding which allow a berth of at least a ship's length. There is a good passage between the Grande Braye and Bouillonaise, close to the latter rock.

The best time to enter the pier is on a rising tide, between half-flood and high water, there being then less run than at any other period whatever, and you will carry in more than 8 feet water between the beacons. Each of the beacons has a circular eye on its top. The Magazine which stands on York Fort, above the lower town, in one with the pierhead, will lead you between the two beacons.

Between Burhou Island and the Casquets lies a remarkable, huge, misshapen rock, called l'Ortach, between which and Burhou are scattered many dangerous sunken rocks and ledges. There is also a ledge of sunken rocks only a quarter of a mile to the westward of the Ortach, on which there are but 14 feet water.

Nearly 6 miles, N.W. by W. from Alderney Telegraph lie the Casquet Rocks, between which and Ortach is the strait called La Passe d'Ortach, or the Casquet Channel. This channel, as well as the Singe Passage, during spring tides, abounds with broken water, even in the calmest weather; but it is produced solely by the rapidity of the tides, the whole space between Ortach and the Casquets assuming the appearance of a continued reef of rocks, though only in appearance. On the largest and highest of the Casquets three stone lighthouses are erected in a triangular position with respect to each other, and are all fitted with revolving lamps. The bearings of the lighthouses one from the other are as follows, viz., from the south-eastern to the north-western lighthouse, N.W.  $\frac{1}{4}$  W.; from the north-western to the north-eastern lighthouse, E.  $\frac{1}{4}$  N.; and from the north-eastern to the south-eastern lighthouse, S.W.  $\frac{1}{4}$  W. The three lights will consequently appear as but two when viewed in either of those three directions. The summits of the lighthouses are all at the same height, 120 feet above the level of the sea. The lights may be seen in clear weather upwards of 5 leagues. The Casquet Rocks are bold-to.

A little more than one mile S.E. by E.  $\frac{1}{4}$  E. off the Casquets lies the rock called Le Quest, and a third of a mile to the south-westward of Le Quest are Les Frouquies.

In going through the Casquet Channel be careful to keep well over towards Ortach, that is, one-third nearer to Ortach than to the Casquets, by which you will avoid Le Quest and Le Pommier.

The Casquet Channel should never be attempted on an ebb or south-western tide,

from the northward, except in case of emergency. The long western mark to clear Les Maquereaux, Pierres de Bût, and all danger on the northern side of Burhou Island, Nannels, &c., is the Casquet Rocks their own apparent breadth open to the northward of La Verte-Tête, W.  $\frac{1}{2}$  N., which is the most north-western rock of all those in the neighbourhood of Burhou, and never covers. The mark to clear all danger on the eastern side of Burhou, Nannels, &c., is the western Mill on Alderney open to the eastward of the stone Guard-house on Mont Torgee, S. The impetuosity of the tides renders any attempt at anchoring in the vicinity of the Casquets rather hazardous, and the water is very deep.

Between Alderney and Cape la Hague is the strait called the Race of Alderney, or Raz Blanchard; the stream in which, when running to the south-westward during spring tides, was found to exceed the rate of  $6\frac{1}{2}$  miles per hour, and during the neaps nearly 5.

There are many dangerous patches of rocks on all sides of Alderney; those which are to be most apprehended on the eastern side of the island are, as has been already observed, the Boufresses, Brinchetais, and Blanchard. To clear the Boufresses, Brinchetais, and Blanchard, the Coquelicot rocks should be opened out their own apparent breadth to the southward of the Etart, W.  $\frac{1}{2}$  N., but no more, as three unconnected rocky patches have lately been discovered to the south-eastward of Longy, stretching off as it were from the tails of the Brinchetais and Blanchard at the several distances of half a mile, three-quarters of a mile, and one mile and a quarter from the latter.

A large bank is growing up to the southward of the Coquelicot, on which as little as 6 fathoms may be found.

Boni may be avoided on the southern side, by not approaching Alderney nearer than one mile. The Coquelicot, Noires-Putes, and Orbouée rocks should not be approached within 2 cables' length, nor Les Etats within 3.

The north-eastern side of the island abounds in dangers: those most to be feared are Le Sauquet, La Plate, Le Grois, and a rocky ledge to the north-westward of the former, nearly a quarter of a mile from the shore. The three former appear at low water-ordinary spring tides, but the latter is always covered. The Grois covers at three-quarters flood.

In running or beating down the Race of Alderney to the south-westward for the Great Russel, great care must be taken to avoid the Banc de Chole. It lies nearly in the direct line between the Great Russel and the Race of Alderney, and for its middle and shoalest part take the following bearings and distances, viz., Alderney Telegraph Tower N.N.E.  $\frac{1}{2}$  E.  $7\frac{1}{2}$  miles, Casquet Lights N. by W.  $\frac{1}{2}$  W.  $10\frac{1}{2}$  miles, Sercq Windmill S.W. by W.  $10\frac{1}{2}$  miles. This shoal is a composition of sand, gravel, and various shells; it extends W.S.W. and is nearly 6 miles in length, and  $1\frac{1}{2}$  in breadth, having only 10 feet water on its middle.

The direct course from the Race of Alderney to the Little Russel is W.S.W.  $\frac{1}{2}$  W. and from the Casquets thereto is S.W.  $\frac{1}{2}$  S. nearly. If bound from the Race or Casquets to the Little Russel, between the periods of low water and half flood, and of high water and half ebb, allowance must be made for the tide, which obliquely crosses the courses during those periods.

About 3 miles south-eastward from the Casquets, and the same distance south-westward from Ortach, there is a small bank composed of coarse sand with pieces of shells of different sorts, extending about  $1\frac{1}{2}$  miles N.W. and S.E. nearly, the two ends thereof inclining to the southward.

The tides in the neighbourhood of Alderney, with the exception of the Race,

Singe, and Casquet Channels, are subject to the same changes as those in the vicinity of the other islands. Along the southern side of the island, between the Orbouée Rock and the Hommet de Longy, there are nine hours of eastern and but three of western tide. The former stream commences one hour before low water, and runs along the land towards Longy during the whole flood, and until two hours' ebb again; in the neighbourhood of which, meeting with the south-western stream from the Race, it very suddenly veers and unites therewith. The latter stream commences at two hours' ebb, and sets towards the Orbouée for three hours, or until five hours' ebb, at which time it joins the south-western stream from the Passe du Singe. There is also an in-shore tide on the northern side of the island, between the Corbet and Sauquet Rocks, and within or to the southward of the vortex of the Singe, running nine hours to the westward and only three to the eastward; the former stream commences one hour before high water, and the latter at two hours' flood. These two tides are exactly the reverse of each other.

The stream in the Race of Alderney is in some degree connected with those of the Great Russel and the Deroute Channels, that is, between the period of half ebb and low water, and of half flood and high water, the south-western stream from the Race running directly into and through the Great Russell and the Deroute, and the north-eastern stream from the latter channels running into the Race. A similar union exists between the streams in the Singe and Ortach, and Little Russel channels; between the periods only, however, of three-quarters ebb and one quarter flood, and between three-quarters flood and one-quarter ebb. The stream in the Race, Singe, and Casquet Channels, that is, in their immediate drafts, begins to set to the south-westward at half-ebb exactly, and runs in that direction for six hours, or until half flood, and the contrary with respect to the north-eastern stream, for there is neither high nor low water slack there. The first  $2\frac{1}{4}$  hours of the south-western stream in the Race, that is, from half ebb till low water, sets W.S.W., and the last two hours, that is, from low water till half flood, sets S.W., and the contrary for the first and last  $3\frac{1}{4}$  hours of the north-eastern stream, which, between half flood and high water, sets very strongly round Cape la Hague. This makes  $5\frac{1}{2}$  hours south-western, and  $6\frac{1}{2}$  hours north eastern stream, that is, half an hour's difference between the Race tide and that in the Casquet and Singe Passages. The velocity of the north-eastern stream of tide in the Race, during the springs, exceeds  $7\frac{1}{4}$  miles; that of the south-western stream is  $6\frac{1}{2}$  miles per hour. The neaps do not exceed  $5\frac{1}{4}$  miles.

The stream of tide in the Singe Passage, sets straight through both ways, and runs for equal spaces of time: one branch however of the flood, to the westward of the narrows, sets through between Burhou Island and Ortach; and, to the eastward of the narrows, it veers and sets circuitously round the Pierres de Bût to the north-westward, and both uniting with the Casquet Channel tide, and ultimately with that of the English Channel, again set to the eastward. The last two hours of the south-western stream in the Singe, gradually veers towards the Casquets, as it recedes from the draft of the former passage. The velocity of the north-eastern stream, during the springs, is  $7\frac{1}{4}$  miles; that of the south-western stream  $6\frac{1}{2}$  miles per hour.

The stream of tide in the Ortach Passage begins to run to the north-eastward at half-flood, but after passing Ortach it gradually veers to the northward and sets N.N.E., until it again unites with the stream flowing round the northern side of the Casquets. The south-western stream of this channel, which commences at half-ebb, sets right upon the Quest and the Frouquiers, to avoid which the utmost care

must be taken. The navigation of this channel is not rendered dangerous from the variety of the tides, but from their rapidity.

The direction of the stream of tide in the immediate neighbourhood of the Casquets, though it preserves its rotary propensity, assumes throughout the twelve hours a more north-westerly and south-easterly inclination than it does nearer to Guernsey, viz,—

SET OF THE TIDE.	On the Eastern side of the Casquets.	On the N. W. side of the Casquets.	W. $\frac{1}{2}$ S. 4 $\frac{1}{2}$ Miles from the Casquets.	W. N. W. $\frac{1}{2}$ W. 11 Miles from the Casquets.
From High Water to 1 $\frac{1}{2}$ hours Ebb.	E. N. E.	N. W. by N	N. E. $\frac{1}{2}$ N.	N. N. E. $\frac{1}{4}$ E.
„ 1 $\frac{1}{2}$ hours Ebb „ 3 „	E. N. E.	N. W. by W.	N. by W	North.
„ 3 „ „ 4 $\frac{1}{2}$ „	W. S. W.	S. W.	N. W.	N. W. by W. $\frac{1}{4}$ W.
„ 4 $\frac{1}{2}$ „ „ Low Water.	W. S. W.	S. W.	W. $\frac{1}{2}$ S.	W. $\frac{1}{2}$ S.
„ Low Water „ 1 $\frac{1}{2}$ hours Flood	W. S. W.	South.	S. W. $\frac{1}{2}$ S.	S. S. W. $\frac{1}{4}$ W.
„ 1 $\frac{1}{2}$ h. Flood „ 3 „	W. S. W.	S. S. E.	S. by E.	S. S. E. $\frac{1}{4}$ E.
„ 3 „ „ 4 $\frac{1}{2}$ „	E. N. E.	North.	S. E.	S. E. by E. $\frac{1}{4}$ E.
„ 4 $\frac{1}{2}$ „ „ High Water.	E. N. E.	North.	E. $\frac{1}{2}$ N.	E. $\frac{1}{2}$ N.

On the south-western side of the Casquets, between the periods of half-ebb and low water, there is an eddy of nearly 2 miles in breadth, and of considerable strength. Between low water and two hours flood this eddy revolves more to the eastward, as well as increases in breadth; the natural consequence of the obstruction which the Casquet Rocks present to the tide being in the latter case increased, because acted upon more directly than in the former; and this eddy continues until gradually weakened and destroyed by the current at half-flood: similar eddies exist also on the north-eastern side of the Casquets, the effect of which are exactly the reverse of the preceding. On the south-western side of Ortach there is an eddy of nearly 1 $\frac{1}{2}$  miles in extent, between half-ebb and one hours flood, after which period the stream gradually inclines to the westward, on the south side of Ortach setting at two hours flood directly for the Casquets, until its progress is arrested by the last of the south-western stream in the Ortach Channel. There is no eddy of consequence on the north-eastern side of the Ortach. The velocity of the stream in the latter channel differs but little from that in the Singe channel.

It is high water, on full and change days, at the Island of Alderney, Ortach, and the Casquets, at 45 minutes after 6 o'clock, and the vertical rise of the water during the spring tides is 18 $\frac{1}{2}$  feet only, and during the neaps it does not exceed 10 feet.

The Island of Jersey, is completely encompassed with dangers of every description, which are rendered doubly formidable by the great vertical rise and fall, as well as rapidity of the tides. The most remarkable are the Pierres de Lecq or Paternosters, the Dirouilles, and the Ecrehous, on the northern and north eastern sides; the Banc de Violet, surrounding the south-eastern angle; and the Minquiers with many other rocks to the southward.

Jersey possesses several good bays or roadsteads; that of St. Aubyn, however, being the best both for capacity and convenience.

St. Aubyn Bay is on the southern side of the island, and affords excellent anchorage in from 3 to 5 fathoms water; muddy sand with long grass and sea-weed. The whole of this anchorage, though surrounded on every side by rocks, is perfectly free from any ground capable of damaging a ship's cable, and is sheltered from all winds but those from between S.S.E. and W.N.W., and partially even from them. St. Helier is the principal town on the island, and is situated in the north-eastern recess of St. Aubyn Bay. The little town of St. Aubyn with its castle, which gives its name to the bay, stands on the western side, opposite to St. Helier, their distance asunder being about  $2\frac{1}{2}$  miles. Both these towns have stone pier-harbours wherein vessels lie aground at low water upon a soft muddy sand. There is also a strong mole-head projecting from the northern side of St. Aubyn Castle, forming a sort of basin, in addition to that of the pier, where vessels frequently refit and unload, grounding however at low water.

The dangers to be apprehended in going into St. Aubyn Bay are as follows, viz., Les Fours' l'Hubaut with a long ledge outside of it, Les Grunes, La Sellette, and Le Grunot, on the western side; La Rouaudière, La Grune St. Michel, l'Hinguette and La Demie du Pas, on which there is a wooden pole, on the eastern side. The Diamond, with La Grune du Port and Le Pignonnet, are well within the bay. The passages among these rocks are extremely narrow.

Between Noirmont Point and the Sellette Rock lies the western entrance into St. Aubyn Bay, which is most generally used by vessels of all descriptions. There are, however, two sunken rocks exactly midway between Noirmont Point and the Sellette; they appear at low water great spring tides, but at one-quarter flood have not less than 8 feet water over them. They are called the Grand Four and the Petit Four. The Sellette appears soon after half ebb.

In approaching the Western Passage from the westward, the first danger to be apprehended is Le Boiteux Rock; it lies about half a mile to the westward of La Corbière, and shews at four hours' ebb. Having rounded the Boiteux, which will be effected when the white sand in the Bay of St. Brelade begins to appear open of Point la Moye, steer in a parallel direction along the land towards Noirmont Tower, which stands on the lowest part of Noirmont Point, the course being S.E.  $\frac{1}{4}$  E. nearly, and minding to give the Corbière Rock a berth of at least four cables, and La Frette Point a berth of three cables' length; by which precaution you will pass to the northward of the Hubaut, the two Grunes, and the two Fours. The cross mark for the Hubaut is, the western Tower in St. Brelade Bay in one with a large rock to the westward of La Frette Point, called Rousse, N.N.E.  $\frac{1}{4}$  E. The long mark for the Grande Grune is the Tour d'Auvergne, a remarkable building on the high land to the eastward of St. Helier, in one with Elizabeth Castle Hospital, a small red-tiled building standing between the highest part of the said castle and its north-eastern extreme angle, E.  $\frac{1}{4}$  N. For the Grand Four, the Tour d'Auvergne in one with the south-eastern gable of the Barrack, which stands on the south-easternmost part of Elizabeth Castle, E.  $\frac{1}{4}$  N.; and for the Petit Four, the Tour d'Auvergne in one with the False Hermitage, nearly E. by N.; it will then also be in one with the Town-hill Signal-post.

If when abreast of Noirmont Tower you bring the Tour d'Auvergne within four times its apparent width of that part of Elizabeth Castle whereon the flag-staff is erected, the same mark as for the Diamond Rock, E.  $\frac{1}{4}$  N., it will carry you to the northward of the Grand Four and the Petit Four, and to the southward of the





westward from Corbière Point, and from thence extends in the same direction nearly 4 miles, being about half a mile in breadth.

The middle of the north-west Bank lies about 3 miles north westward from Grosnez. It trends E. by N., in breadth about half a mile, and in length  $1\frac{1}{2}$ . The depth of water thereon is from 8 to 10 fathoms.

St. Brelade Bay lies on the south-western part of the island, between La Frette Point and the Corbière. It is much contracted by the dangers in its vicinity, and is not capable of receiving vessels of a greater draught than 16 feet.

There is, to the south eastward of La Moye Point, a ledge of rocks one-third of a mile in length, called Les Aiguillons: there are 4 fathoms between it and the shore, and 7 fathoms close to its south-eastern side above a quarter of a mile off shore.

The Paternosters lie to the northward of Jersey, abreast of the Bay called La Grève de Lecq, from which the middle or highest part is distant nearly  $2\frac{1}{2}$  miles, in the direction of N.E.  $\frac{1}{4}$  N. They trend about east and west, and are in length  $1\frac{1}{2}$  miles. The channel between them and the land is very deep and perfectly free from danger, with the exception of one rock which lies to their south-eastern side, called La Grune de Lecq. There is a channel between the Paternosters and the Dirouilles of more than 4 miles in breadth, quite free from danger, with from 7 to 13 fathoms water. The mark to avoid the north-eastern extremity of the Paternosters is Roselle Mill so far open to the eastward of Belle Hogue Point as to be perpendicular to the low water point S.S.E.; and the mark to avoid the western extremity of the Dirouilles is Verclut Point shut in by that of La Coupe S.  $\frac{1}{2}$  E.

By keeping nearer to Jersey than to the Paternosters you will pass to the southward of the Grune.

About  $3\frac{1}{2}$  miles in a north-westerly direction of the Paternosters lies Le Banc Desormes; it trends to the north-east about  $2\frac{1}{2}$  miles, and is one mile broad, and has on it at low water not less than 12 fathoms.

About 11 miles in a north-easterly direction from the north-eastern point of Jersey, and nearly 14 miles in a south-eastern direction from the Telegraph on Sercq, lies an extensive oyster ground, the various marks for which are as follows, viz., the island of Jethou in one with Bec du Nez (Sercq,) Roselle Mill in one with the Barons de Dirouilles, and the two high heads of the Paternosters in one with Grosnez Point.

Along the northern and southern shore of Jersey, between Grosnez and Belle Hogue Point, and between Seymour Tower and La Corbière, the whole of the flood runs to the eastward, and the ebb to the westward, each six hours, and according to the trend of the land; the velocity of the springs being about 4 knots, and of the neaps 2 knots.

In Grouville and St. Catherine Bays the tide between half ebb and half flood runs to the southward, and to the northward between half flood and half ebb, and the same in St. Ouen Bay, with a velocity in each at the springs of  $4\frac{1}{2}$  knots, and at the neaps of  $2\frac{1}{2}$  knots; the streams will consequently meet at the four principal extremities of the island, viz., La Coupe, Cape Grosnez, La Corbière, and La Conchière. About 2 miles W. by S. from the Corbière it runs as follows: from low water till one-quarter flood, S. by W.; from one-quarter till half flood, S.S.E.; from half flood till high water, S.E. and N.E. (one branch going to the southward of the island and another going to the westward through St. Ouen Bay); from high water till quarter ebb, N. by E.; from one-quarter till half ebb, N.N.W.; from half ebb till low water, N.W.: the velocity here is about 4 knots during the springs, and

$2\frac{1}{2}$  during the neaps. The tide 2 miles northward from Cape Grosnez runs as follows: from half to three-quarters ebb, W.S.W.; from three-quarters ebb to low water, S.S.W.; from low water till half flood, S. and S.E. by E., (one branch as at the Corbiere going through St. Owen Bay, and another to the northward of the island; from 3 till 4 hours' flood, east; from 4 till 5 hours' flood, E.N.E.; from 5 hours' flood till high water, N.E.; from high water till two hours' ebb, N.N.E.; from 2 till 3 hours' ebb, W. by S.; and from half ebb as before: velocity, about 4 knots at the springs, and  $2\frac{1}{2}$  at the neaps.

The tides in the Ruau Channel, between La Coupe and the Ecrehou Rocks, run fair both ways, viz., from 5 hours' flood till 5 hours' ebb the stream is N. by W., and the contrary from 5 hours' ebb till 5 hours' flood: the velocity during the springs being about 5 knots, and that of the neaps at least 3.

The tides in the neighbourhood of La Coughiere run with very great rapidity, and produce great spoutings and overfalls. The velocity in a north-eastern and south-western direction may be taken at 6 knots during the springs, and that of the neaps about 4.

The streams of the tide between Guernsey, Jersey, and the Roches Douvres may be stated as follows:—

HOURS OF THE TIDE.	Lat. $49^{\circ} 12' N$ . Long. $2^{\circ} 36'$	Lat. $49^{\circ} 16' N$ . Long. $2^{\circ} 36' W$ .
From High Water to 1 hour's Ebb. ....	N. by W	E. N. E.
" 1 hour's Ebb " 2 " .....	N. W. by N.	N. by W.
" 2 " " 3 " .....	N. W. by N.	N. W.
" 3 " " 5 " .....	N. W.	W. N. W.
" 5 " " Low Water. ....	W. N. W.	W. by N.
" Low Water " 1 hour's Flood .....	S. S. W.	S. by W.
" 1 h. Flood " 2 " .....	South.	South.
" 2 " " 3 " .....	S. S. E. $\frac{1}{2}$ E.	S. by E. $\frac{1}{2}$ E.
" 3 " " 5 " .....	S. S. E. $\frac{1}{2}$ E.	East.
" 5 " " High Water .....	S. E.	East.

From the foregoing table it will be observed that the north-western and south-eastern streams appear to predominate, and to run much longer in those directions than any other. The position where the collision of the tides takes place previous to their separating, one part towards the north-eastward and the other towards the south-eastward, seems to be between the above two stations. The former position is certainly in the southern indraft, between Jersey and the Roches Douvres, while it is equally apparent that the latter station is in that between Jersey and Guernsey. By keeping Sorel Point ever so little open to the northward of Pleinmont Point you will insure the latter influence; and by opening the land at La Frette to the southward of the Corbiere you will obtain the former, provided that on both these occasions Point St. Martin (Guernsey) bears nearly N.E.  $\frac{1}{2}$  N.: a knowledge of this division of the stream may on many occasions have its use.

It must not, however, be supposed that the positions given above for the collision of the tides remain always the same, for in proportion as the south-western stream between Sercq and Grosnez slackens, so this collision not only decreases in effect, but moves to the south-eastward, and subsequently to the eastward, until at half-flood it ceases altogether, at least in that quarter.

The stream of flood sets generally into St. Aubyn Bay about N.E.; about east in the neighbourhood of the Sellette Rocks.

The bridge or causeway to the northward of Elizabeth Castle begins to show itself at half ebb, and the utmost depth on it at high water equinoctial tides is 22 feet. The causeway between Elizabeth Castle and the Hermitage is barely uncovered at half ebb, and the greatest depth of water there is 23 feet.

At Maitre Isle (Minquiers) the spring tides, on some occasions, rise and fall 46 feet, and with a velocity of 7 knots; but the ordinary rate of the springs is 6 knots, and of the neaps 4.

The set of the tides about 10 miles W. by N. of the Deree Rock, (St. Ouen just appearing to the eastward of the Corbière,) and to the eastward of a supposed straight line drawn from Cape Frehel to the Roches Douvres, inclines principally to the north-western and south-eastern quarters of the compass.

It is high water all round the island of Jersey at the full and change of the moon at 10 minutes after 6 o'clock; and the equinoctial spring tides rise 42 feet.

In the offing, between the Casquets and Guernsey, and between Guernsey and Jersey, the first half of the flood tide runs to the southward and south-eastward, and continues so to run until the water has risen three hours by the shore, or half flood; although in the Race of Alderney, the Singe and Ortach Channels, the Great and Little Russels, the Deroute Channel, and in St. Catherine, St. Ouen, and Grouville Bays, it continues more or less to run to the south westward until that period, making what is termed tide and half-tide with the shore. At half-flood the tide in the former case runs more to the south-eastward, and in the above mentioned channels it sets to the north-eastward and northward; thus having progressively veered from south to north-east during a space of three hours only. At half ebb the whole body of water between Cape la Hague and the Iles de Brehat sets to the westward and south-westward, as well in the several channels above mentioned as in the offing; thus having occupied six hours in rounding the compass between the periods of half flood and half ebb.

---

## SECTION XIII.

### THE CHANNEL ISLANDS TO USHANT AND BREST.

The Isle of Brehat bears from Cape Frehel N.W.  $\frac{1}{4}$  W. about  $9\frac{1}{2}$  leagues; but it is necessary to keep more to the northward to avoid some rocks called Les Bouillons and Lejou, about half-way between in the direct course, and are generally under water. Detached reefs extend 4 miles to the north-eastward of Brehat which are dangerous; the outer one is distinguished by a beacon. Gautin and Barnouie are rocks several miles further out, and which uncover in spring tides.

Upon the Héaux de Brehat has lately been erected a fixed light of the first class,

which, being 146 feet above the level of high water, may be seen at between 6 and 7 leagues.

The Roches Douvres extend from east to west above 2 miles, and consist of 12 rocky heads which are never covered. The highest of them is about the middle of the patch; it is 48 feet above low water, and lies in  $49^{\circ} 6' 30''$  N. and  $2^{\circ} 35' 14''$  W. They lie about S.W. from Guernaey, from which they are distant about 6 leagues. When upon these rocks, the Corbière as Jersey bears E. by S. and Harroway's Point, in Guernsey, N.E. by E.

About 19 miles to the westward of Brehat lies the Seven Isles, which may be seen at about seven leagues off. Upon one is a small fort, the others not occupied. Upon one is built a lighthouse, exhibiting a light which flashes every three minutes for 4 or 5 seconds: during the intervals, a faint light, preceded and followed by short eclipses: elevated 167 feet above the sea, and in clear weather the flashes may be seen between 3 and 4 leagues.

It should be observed that this light might be mistaken for the revolving light on Cape Frehel, if attention were paid merely to the duration of the intervals between the flashes; which intervals, in the light of Cape Frehel, are of two minutes and three-quarters: but the light of the Seven Isles may be distinguished from all the other intermittent lights in the Channel by its showing a fixed light, varied by flashes. It is, moreover, to be observed, that mariners, making this light and steering eastward, in order to pass between the Roche Douvre and the Isle of Brehat, cannot fail of seeing the fixed light of the Heaux, above-mentioned, which is five leagues and a half eastward from the Isles aux Moines, and eleven leagues N.W. from Cape Frehel.

The Triagons is a rocky bank partly above and partly below the water, about 5 miles W.N.W. from the Seven Islands, being about 3 miles in length. A ledge, called La Fuillée, lies about a league N.W.  $\frac{1}{4}$  W. from the Triagons. Between them there is a good channel.

The Isle de Bas is separated from the land by a narrow channel. On the western side of the isle is an intermittent light, eclipsed once in a minute, elevated 223 feet above high water, and may be seen from the distance of 27 miles. On the opposite coast is the small harbour of Roscou, which you may enter from either side, but the passage is difficult from the number of rocks which lie in the way.

Morlaix is the chief harbour on this part of the coast, but the town lies more than 3 leagues from the entrance of the harbour. It should not be attempted without a pilot if not acquainted with it.

To sail into this harbour, when you have brought the Bull or Saddle to bear W.N.W.  $\frac{1}{4}$  W. about 3 miles, steer for the northernmost point of land on the east of the entrance of the bay, bearing S.E. by S. nearly, till you come within a mile of the rocks which lie off that point. Then steer S.W.  $\frac{1}{4}$  S. from the Isle Terenes, the small island lying off the point on the east side of the river's entrance. You must leave all the rocks with beacons on the larboard, and the Reguel Islands, with the Isle aux Femmes, on the starboard side. From the Isle Terenes, off the Eastern, you may proceed upward till you are above the point on the other side of the river, and anchor in 6 or 7 fathoms of water.

On the west side of Morlaix Bay is the small harbour of St. Pol de Leon, frequented only by coasters who lie afloat.

Roche Blanche, says Mr. Dechamps, lies about 6 leagues N. by E. (true) from Isle de Bas; that it is never uncovered, but the sea breaks furiously over it in storms at low water, and the foaming of the sea remains some time in sight. The Caskets

bear from it N.E. by E. (true) distant about 27 leagues. Vessels running up channel, and meeting with this danger, might take their departure from it and thus steer to the northward of the Caskets. Some persons have asserted that there is always sufficient water over this rock for vessels of every draught; but I doubt this, for the sea would hardly break over it with such violence if covered with deep water. It may, however, put the mariner upon his guard, and I have seen the sea foaming over this rock, when, in clear weather, the Island Bas was perfectly in sight. My soundings were 53 fathoms, coarse sand and gravel, with numerous fishing-vessels at a distance.

Westward of Isle de Bas, the coast should not be approached too near, as many ledges and rocks extend to the distance of 2 miles from shore; by keeping about 3 miles from shore you will have about 20 fathoms. There is a large sandy bay about 4 leagues to the westward of Isle de Bas, called Ance de Goulven, where you may anchor with the wind off shore. Between this bay and the extremity of the land to the westward, the whole space is full of rocks and shoals to the distance of 2 miles from shore. During the night it is recommended not to approach nearer than 36 fathoms: bottom, grey sand and pebbles.

Aber Vrach bay is good, but difficult of access, lying about  $7\frac{1}{2}$  leagues to the westward of Isle de Bas. Two leagues from this bay are the Porsal rocks, almost all under water, and distant nearly a league from shore. Although there is anchorage amongst them, the passages are so intricate that no stranger should attempt them.

A remarkable large black rock, called the Four or Oven, always above water, lies about a mile from the land's end of the department of Finisterre, and serves as a mark for vessels bound to Brest within the island of Ushant; its bearing and distance from Ushant are E.  $\frac{1}{4}$  S.,  $3\frac{1}{2}$  leagues. From Porsal rocks to the Four the coast trends S.W.  $\frac{1}{4}$  S., nearly 2 leagues; the land between of moderate height, but with numerous rocks, many of which lie a mile from shore. Coming towards the shore in night-time, ships should not approach nearer than 45 or 50 fathoms. The ground generally gray sand, with small stones and flints.

Ushant, a steep craggy island, is 4 miles in length from E. to W., and 2 miles broad. On the south-west side of it there is a harbour: the rest of the island is surrounded with rocks, except at an anchorage on the north side. Upon the north-east part is a conspicuous lighthouse, which bears a powerful fixed light, elevated 265 feet above high water, and may be seen in clear weather 6 leagues off.

N.W.  $\frac{1}{4}$  W.,  $4\frac{1}{2}$  miles from the lighthouse, and nearly N.  $\frac{1}{4}$  E.,  $3\frac{1}{2}$  miles from the western part of the island, lies a dangerous bed of sunken rocks, called the Basse Callet, and at the distance of a mile from the S.W. point, a rock named the Jument, equally dangerous, being alternately covered and uncovered with every tide.

St. Vincent's Channel, &c.—Between Ushant and the smaller islands to the southward, is a channel of more than one mile in breadth, called the Chenal du Frotneur, or Fromveur, and by us St. Vincent's Channel, in honour of Earl St. Vincent, under whose orders it was surveyed. The tide runs through very rapidly, generally exceeding 4 knots. The course through is east; but a passage should not be attempted against the tide. The dangers on the north side do not extend half a mile from the shore.

The range of islands and dangers to the S.S.E. of Ushant extend to the distance of 4 leagues. The westernmost of the dangers are the Pierre Verte, a bank of sunken rocks, which appear at low water spring tides; and the Buffalo. The former lies 5 miles S.S.E.  $\frac{1}{4}$  E. from the S.W. point of Ushant: the latter, or Buffalo,

lies S.S.E.  $10\frac{1}{2}$  miles from the same point, and has 8 fathoms close to it. Hence to the Black Rocks, upon the westernmost part of the general range of dangers, the bearing and distance are S.S.E.  $\frac{1}{2}$  E. nearly 3 miles : between are from 12 to 29 fathoms.

The Passage du Four is that channel which lies between Ushant and the main. It takes its name from the remarkable rock called the Four or Oven, heretofore mentioned. the distance from the Four to the south point, called St. Matthew's, at the entrance of the bay of Brest, is 12 miles, the bearing S.S.W. You must give the Four a good berth in passing, to avoid a danger called the Bourreau Bank, which is shoal, situated more than a mile to the westward. Upon St. Matthew's Point is a revolving light, the eclipses succeeding each other every half minute ; it is elevated 177 feet, and visible 6 leagues. In fine weather the eclipses do not appear total when within the distance of 3 leagues.

Tides.—In the Passage du Four the tides run very strongly. It flows here, on the change and full days, at half-past four ; but in the offing the stream continues to run for 3 hours longer. Between the Isle de Bas and Ushant the flood-tide sets east, and the ebb west ; in the Passage du Four the flood runs to to the northward, and the ebb to the southward. Spring tides rise at Ushant 21 feet ; and upon the coast to the eastward from 24 to 26 feet.

About 10 miles from the Four rock is the point of Conquet, between which are several rocks, particularly the Platresses and the Porcean ; the former lies nearly 2 leagues S.W. from the Four rock : there are also many other rocks in their vicinity. You keep the mid channel by keeping St. Matthew's Point on with the great valley, just within Vintier Point ; and when you have brought Treizion Mill E.S.E., the Platresses will be N.W. by W. from you. The great valley is near Vintier Point ; to the eastward is a smaller one. About 3 cables' length from Vintier Point is Vintier Rock, which dries at low water. To avoid it, keep St. Matthew's Abbey on with the great valley, until you get close to the shore ; then run along within a cable's length. When the small Church which stands on Vintier Point bears E.S.E. the rock will be W.N.W., two cables distant.

In running into Conquet, you will avoid the rocks called the Finisterres, by running close along the shore until you get within the haven, which dries at low water.

Off St. Matthew's Point are several rocks, called Les Moines or Monks ; to the S.W. of them several others stretching out for nearly a mile. St. Matthew's Point from Conquet Point is about  $2\frac{1}{2}$  miles.

A good road lies off St. Matthew's Abbey ; but be careful of some rocks which lie at the north side. When in, the anchorage is good in 6 or 7 fathoms.

In sailing into the harbour of Brest take care to avoid the sunken rock called the Coq, which lies half a gun-shot from the shore, and about  $1\frac{1}{2}$  mile to the eastward of St. Matthew's Point, with the south end of Benequet Isle on with that point. To go to the southward of this rock, steer about S.E. from St. Matthew's Point, taking care to keep the north end of Benequet Isle open of it, until the mill which stands upon the north land comes to the westward of the trees. To sail to the northward of the Coq, you must proceed from St. Matthew's Point along the north land, and when the before-mentioned mill bears N. by W. and the trees north, you will be past the Coq. The former is much the safer channel.

About a mile and a half E.S.E. from the Coq, and a quarter of a league to the south of Point Bertheume, is the Buzec Rock, very dangerous at low water ; you may go on either side of it. The best way, after passing the Coq, is to run along the north shore, at the distance of two cables' length, and thus sail S.E. by E.  $\frac{1}{4}$  E.

across the bay of Bertheume. When you come into the Gullet be careful to avoid the Fillettes, Mingan, and other rocks, which lie off Camaret Point, nearly in mid-channel. Carefully avoid also the Bagino or Kergutio Rocks which lie near to the mouth of Brest Water, and about two cables' length off the north shore; you may go on either side with safety, but it is usual to run to the northward of them; and when Brest appears open of Porzic Point, steer directly for it, and anchor there in 8 or 9 fathoms, or more to the southward in from 10 to 15 fathoms. You may also anchor before the river Landernau, or go to the southward and anchor before Launnoe, in from 13 to 10 fathoms. In the latter case take care to keep clear of the Renard Bank, which lies about a mile N.W. by W.  $\frac{1}{2}$  W. from Plougastel Point, and about 3 miles S. by W. from Brest.

In Bertheume Bay, about 4 miles to the eastward of St. Matthew's Point, is good anchoring, with northerly and N.E. winds, in 10 or 11 fathoms. Opposite Bertheume's Bay, and about 4 leagues S.S.E. from St. Matthew's Point, is the great bay called Dovernenez Bay. Between these bays lie many rocks, which must be carefully avoided.

Dovernenez Bay is capable of containing the largest fleets, being more than 6 miles broad, and requires only the inspection of the chart to enable the mariner to navigate it with safety.

## SECTION XIV.

### DIRECTIONS FOR ENTERING THE ENGLISH CHANNEL, FROM CAPT. MARTIN WHITE, R.N.

The water, generally speaking, in the entrance of the British Channel is from 8 to 10 fathoms deeper towards the French coast than towards the English. The soundings too are coarser, the stones are larger, and the different substances altogether more loose and unconnected, and of a paler colour, than on the northern side the Channel.

#### *Remarks on the Soundings westward and southward of Scilly.*

The variations in the soundings upon a supposed radius of 6 leagues from Scilly, in any direction between the limits of N.N.W. and S.  $\frac{1}{4}$  W., do not materially differ; the depths are from 55 to 60 fathoms, whence they shoal pretty gradually towards the rocks. The ground to the southward of the islands within the above radius, though in quality nearly the same, is somewhat finer and more tenacious than that to the westward and north-westward thereof. The soundings, however, in both cases, consist chiefly of fine or coarse sandy-mixed ground, of a pale white or greyish colour, (which becomes coarser and darker coloured in approaching Scilly,) with a mealy surface, interspersed with small stones and pieces of shells; but there is positively no oaze, nor any matter that can be mistaken for it, at or within the above distance from the islands, in any direction; and, moreover, the transition from oazy ground to that of any other quality, northward, westward, and S. westward of Scilly, is always evident, the alterations being manifest even on the distance of one mile.

The variations in the depths, on a supposed radius of 12 leagues from Scilly, in any direction between the bearings of N.N.W. and S.  $\frac{1}{4}$  W., are comprised within the limits of 63 and 67 fathoms. In this particular, however, if oaze forms any part of the ingredients brought up by the lead, you can neither be to the southward of



49° 38' N., nor to the northward of 50° 17' N., but must be upon or between those parallels: on the other hand, if when at this distance from the islands, and with these depths of water, or less, the ground be fine or coarse sand, of nearly the colour and consistency of beaten pepper, or light grey sand, or reddish brown sand, with minute pieces of convex shells, or, indeed, of any quality in which oaze forms no part of the compound, you cannot be between those parallels, but must be upon, or to the northward of, 50° 17', or upon, or to the southward of, 49° 38', and, by consequence, nearly in the fair-way of the channel. The character of the soundings is here given as it exists after a period of moderate weather: a long continuation of gales of wind from the westward and S. westward, particularly during spring tides, has been frequently found to cause a sensible alteration in the quality of the looser surfaces; while those gales which blow from the eastward and north-eastward have as often produced a contrary effect, not only removing the superfluous ground accumulated by the westerly winds, but also that which is found to be native or peculiar to the spot. This revulsion is very remarkable in the vicinity of the Channel Islands, and not less so off the Start and Lizard: much consideration is therefore necessary in their discrimination, after continued boisterous weather.

In thick weather do not approach Scilly within the depth of 56 fathoms, as you will not then be more than 3 leagues from the rocks.

The best parallel for entering the British Channel is between 49° 15' and 49° 25', according to the inclination of the wind; because it is between those limits that the relative situation of your vessel can, with the greater certainty be ascertained, as well in respect to depth of water as to quality of ground (alluding to the discrimination between oaze and sand), and which cannot be so well defined in any other latitude intended to be made the approach to the channel.

*Running for the British Channel, upon and between the Parallels  
of 49° 15' and 49° 25'.*

Between the parallels of 49° 15' and 49° 25' the edge of the bank will be found in the longitude of 11° 18' W., and consequently 65 leagues from Scilly. Here the depths of water will be from 270 to 335 fathoms, and the ground a mixture of sand and dark-greenish oaze. From hence, as you proceed towards the channel, you will find sand and oaze for 16 leagues farther eastward, the depths decreasing very suddenly from 81 and 80 fathoms to 71 and 69, and the ground changing to coarse and fine reddish-yellow sand and shingle.

This is the surface of the Great Sole Bank, which thwarts the parallel very nearly at right angles, its length being about 36 miles, and its breadth 9. The southern part of this bank is in latitude 49° 4' N. and longitude 9° 55' W., trending thence in a N.N.W. direction. From hence St. Agnes lighthouse bears E.  $\frac{1}{2}$  S., distant 49 leagues; Cape Clear lighthouse N.E. by N., 42 leagues; and Ushant lighthouse S.E.  $\frac{1}{4}$  E., 65 leagues distant. Passing this bank you will deepen the water in like proportion, and again get sand and oaze, until as far eastward as 9° 30', when the bottom again changes to clean sand, from whence no more oaze will be obtained all the way into the channel, so long as the parallel of 49° 17' is preserved; on the contrary, if oaze forms any part of the ingredients brought up by the lead, after passing the meridian of 9° 30' upon the aforesaid parallel, you must be to the northward of 49° 17', as there is no oaze, or any substance which can be mistaken for it, to the southward of the said parallel, when eastward of the longitude of 9° 30' W.

On the parallel of 49° 25', however, you will find oaze in the longitude of 8° 40',

though you will again lose it when advanced as far as  $7^{\circ} 50'$  : here the depths suddenly decrease to 62 and 58 fathoms, the bottom being composed of coarse light yellow and dark gray sand alternately with shingle. This is the surface of the Haddock Bank, which thwarts this parallel in a north-easterly and south-westerly direction, and from which Scilly bears E.  $\frac{1}{4}$  N., distant 23 leagues. Passing the Haddock Bank, you will again find deeper water, with oaze and sand mixed; the former of which substances you will eventually lose six leagues farther eastward, or in the longitude of  $7^{\circ} 20'$ .

The fair-way of the British Channel, when eastward of Ushant or the Lizard, should always be considered as limited to the respective distances of four and eight leagues from the English coast, if the wind will permit; not only in consequence of the dangers which exist on the opposite coast, but because the soundings increase and decrease more progressively on the English coast than on that of France, inasmuch that, with reference to the above limitations, the depths of water between the different meridians may be calculated upon with certainty to vary in the under-mentioned proportions, viz. :—

Between the meridian of the Lizard and that of the Start.....	2 fathoms every 5 leagues.
„ „ Start „	Lyme Regis 3 fathoms every 4 leagues.
„ „ Lyme „	Portland ... no variation.
„ „ Portland „	Dunnose ... varying from 28 to 36 faths.

A close attention to the peculiar character of the soundings mentioned in the preceding part of these instructions, together with the remarkable rippings and overfalls which so universally prevail, even in the finest weather, off the French shore, will always demonstrate your position, as to whether you are northward or southward of the channel fair-way. Should you, however, from unavoidable contingencies, after being as far eastward as the Start, in your progress up the channel, be thrown to the southward of the fair-way, or should a scant southerly wind, with indications of a gale, make it necessary for you to court an offing to the southward, and in doing so you find the water suddenly deepen from 37, 39, and 40 fathoms, to 50, 55, and 60, you may conclude, with great confidence, that you are in the stream, or parallel of the Casquets, or very near it, and either in Melville Pit, or in Hurds Dyke; and, in either case, should haul or edge to the northward into the fair-way, carefully bearing in mind the set of the tide. The centre of the former pit is 11 leagues to the westward of the Casquets, and is of very small extent; the south-western extreme of the latter is 5 leagues only to the westward of those rocks; it thence trends connectedly round the northern side thereof, in a sort of winding equidistant direction, stretching away north-eastward of Alderney, as far nearly as the meridian of Cape la Hague; and though other local discordances may be traced among the soundings in various parts of the British Channel, yet there are no such corresponding transitions, from shoal water to deep, to be found anywhere else; no doubt, therefore, should ever arise as to position.

On the parallel of the Fasnet, and in the longitude of  $11^{\circ} 34'$  W., are 286 fathoms water, the ground a sort of fine dark viscous brown sand: this is the edge of the bank. Thence, as you proceed eastward, the depths decrease very suddenly. In the longitude of  $11^{\circ}$  are 96 fathoms very fine dark sand: from hence to the longitude of  $10^{\circ} 30'$  the depths decrease more gradually, viz., about 4 fathoms every 5 miles, but again decrease very suddenly until within  $5\frac{1}{2}$  leagues of the land. Seven leagues westward of Mizen Head there are 60 fathoms oazy ground, and not farther off than 10 leagues 80 fathoms will be found, the bottom oaze as before.

Vessels bound into the Severn from the Atlantic should endeavour to preserve the parallel of Trevoze Head, or that of  $50^{\circ} 30' N.$ , not only with a view of counter-acting the north-westerly and northerly excess of tide which prevails in the Irish Channel, but because the soundings, on approaching it, decrease gradually, and because this promontory projects a considerable distance into the sea beyond the general direction of the Cornish coast. The land also, being very high and steep, renders it the most eligible spot for a landfall between the Lands end and Hartland Point, from whence a vessel may with confidence shape a course for the Bristol Channel. On this parallel and in the longitude of  $10^{\circ} 53'$  are 140 fathoms, fine dark-brown sand: this appears to be the edge of the bank of soundings in that latitude. From hence the transition to shoal water is very sudden, as 13 miles farther eastward are only 94 fathoms. This depth is in the longitude of  $10^{\circ} 32' W.$ , and as you proceed easterly the depths more gradually decrease. In longitude  $9^{\circ} 44'$  are 71 fathoms, very fine dark-grey sand, of the consistency of beaten pepper; 7 leagues farther eastward are 71 and 69 fathoms also; the latter soundings are, however, oazy. Seven miles to the north-westward of the latter position, and 6 miles eastward of the former, are 59, 55, and 53 fathoms: this is the western extreme of the Nymph Bank; and 4 and 11 leagues southward of the former position lie the south-western extremes of the said bank, in 60 and 64 fathoms. Proceeding easterly from the former position, you will retain nearly the same depths until you advance as far as the longitude of  $8^{\circ} 26'$ , where you will find as little as 53 and even 45 fathoms, coarse tenacious light ground, consisting chiefly of mutilated shells and minute stony particles, and you will almost immediately afterwards drop into 65 and 69 fathoms oazy ground. The former is the shoalest part of the Nymph, and is distant from Scilly 29 leagues, in the direction of N.W.  $\frac{1}{4}$  N., 43 leagues from Trevoze Head N.W. by W.  $\frac{1}{4}$  W., and 22 leagues S. by E. from Cape Clear; to the eastward of the latter depth, the soundings shoal pretty gradually towards the western coast of Cornwall, nine leagues from which are 34 fathoms.

The Nymph Bank is nearly midway between the English and Irish coasts. There are only 45 fathoms on its shoalest part, which is in latitude  $50^{\circ} 32' N.$ , and longitude  $8^{\circ} 26' W.$  South westward of this the soundings vary from 50 to 60 fathoms. This bank shoals in irregular, uneven patches, taking its rise in the vicinity of the Hook lighthouse, and thence trending along the Irish coast round Cape Clear, even as far westward as the meridian of Dursey Island. It is very steep, particularly on its south-eastern and western edges, and the quality of the ground thereon is principally, though not wholly, that of coarse and fine sand; in some places, however, oaze will come up with the lead. Indeed the deeper parts are wholly oaze, though not very tenacious. The tide causes numerous rippings on all parts of this bank, and when the wind blows strong the sea breaks heavily, particularly when opposed to the tide.

The soundings upon a supposed radius of 16 leagues from the Smalls lighthouse, in any direction between N.W. by W.  $\frac{1}{4}$  W. and S.W.  $\frac{1}{4}$  S. are nearly wholly oaze, or sand mixed therewith. To the north-westward, as well as to the eastward of these limits, the bottom suddenly becomes a sort of dark-reddish sand, which ground is the peculiar criterion of an approach to the Bristol Channel. In running from the westward for the mouth of the Bristol Channel, therefore, if the ground brought up by the lead be oaze or sand mixed therewith, you cannot be to the southward of  $50^{\circ} 57' N.$ , but must be to the northward of that parallel, and to the westward of the meridian of Grasholm, let the depth be what it may. If, on the contrary, the soundings are wholly free from oaze, you must be to the eastward of the latter

meridian. The transition from oaze to sand in the neighbourhood is so evident that it cannot be mistaken.

On the parallel of Scilly the transition from deep to shoal water is very sudden. In longitude  $10^{\circ} 53'$  there is no bottom with 190 fathoms of line, and 10 miles farther eastward there are but 84; here the bottom is fine dark brown sand. This depth is 59 leagues from Scilly. Proceeding on this parallel, the depths fluctuate between 79 and 69 fathoms, as far eastward as the longitude of  $9^{\circ}$ , where there are 67 and 59 fathoms, ground wholly sand, (the northern part of a small knoll which exists in this neighbourhood, called Cockburn Knoll); from whence to the longitude of  $8^{\circ} 20'$  the soundings rather increase, and again decrease towards the longitude of  $8^{\circ}$ , near which meridian you will suddenly fall upon 40 and 39 fathoms: this is the south-western edge of the Jones Bank. The shoalest part of this bank is in latitude  $49^{\circ} 53'$ , and in longitude  $7^{\circ} 58'$ ; it is consequently distant from Scilly 21 leagues, and in the same latitude with those islands. From Cape Clear it is distant 36 leagues in the direction of S.  $\frac{1}{2}$  E., and 47 leagues N.N.W.  $\frac{1}{2}$  W. from Ushant. This bank is 20 miles in length, and from 2 to 6 in breadth, and trends as near as possible S.E. by E.  $\frac{1}{2}$  E. and N.W. by W.  $\frac{1}{2}$  W., shoaling in patches. It has from 39 to 50 fathoms water upon it, and from 65 to 70 very close all around it. The quality of the soundings upon Jones Bank is that of fine and coarse grey and yellow sand instead of oaze, interspersed with brittle shelly substances and minute yellow, reddish, angular stones, but the ground around it is wholly oaze. There are several other small knolls or banks between it and the Nymph Bank, though none have less water than 55 fathoms. The tide causes universally great rippings on all parts of this bank, but particularly between the periods of four hours' ebb and high water. There is no bank or shoal whatever between it and the Scilly Islands.

On the parallel of Ushant you are transferred from 200 fathoms to 170 and 95 almost immediately, and then as suddenly into 85 fathoms: the latter depths are situated on the north-western part of the Little Sole Bank, and the soundings continue equally discordant until you advance as far eastward as longitude  $8^{\circ}$ , where they begin to be more regular and progressive. The general direction of the edge of soundings between the parallels of  $49^{\circ} 20'$  and  $51^{\circ} 30'$  appears to be about N.N. E.  $\frac{1}{2}$  E. and S.S.W.  $\frac{1}{2}$  W., describing a sort of winding line through and between the above meridians. From the latitude of  $49^{\circ} 20'$  the edge of the bank suddenly trends away to the south-eastward. In latitude  $48^{\circ} 55'$  and longitude  $10^{\circ} 51'$  there are 217 fathoms, ground wholly oaze, of a dark-muddy greenish colour; four, five, and seven leagues to the south eastward of which there is no bottom to be found at 230 fathoms. In latitude  $48^{\circ} 40'$  and longitude  $10^{\circ} 21'$  are 194 fathoms, sand and oaze mixed; and ten miles eastward of this no bottom exists at 200 fathoms. In latitude  $48^{\circ} 28'$  and longitude  $9^{\circ} 45'$  are 107 fathoms, oaze; and two miles only to the southward of this no bottom could be found at 200 fathoms: alternating in the same manner towards the southern part of the Little Sole Bank, from whence the edge of soundings is distant only eight or nine miles.

The southern part of the Little Sole Bank is in latitude  $48^{\circ} 18'$  N. and longitude of  $8^{\circ} 52'$  W., and thence trending in a northerly, north-westerly, and westerly direction, occupies a space of about nine leagues from N.W. to S.E., and nearly the same in an easterly and westerly direction. This bank like the Nymph, shoalens in patches, from 88 to 66 fathoms, all of which are very steep-to, having between them from 90 to 138 fathoms. The shoalest part of the Little Sole Bank, 66 fathoms, is 51 leagues N.W. by W.  $\frac{1}{2}$  W. from Ushant light-house, 46 leagues W.S.

W.  $\frac{1}{2}$  W. from that of Scilly, and 64 leagues S.S.W.  $\frac{1}{2}$  W. from the Gallyhead in the county of Cork. The quality of the ground thereupon is wholly composed of coarse or fine greyish sand, mixed with small reddish-black and yellow pebbles and pieces of various shells, covered for the most part with a sort of scaly or hairy incrustation. This bank, as well as the whole extent of the edge of soundings, may always be discovered in serene weather from the numerous rippings in its vicinity, and in boisterous weather the transition from deep water to shoal is rendered very apparent by the sudden alterations in the colour of the water, which from blue changes to that of a disturbed green. Passing the Little Sole Bank you will have from 95 to 90 fathoms, fine light-coloured sand, and pieces of ribbed shells. Five leagues farther eastward on the same parallel the depths decrease to 88 fathoms, though the soundings are nearly the same in quality: this is forty-five leagues from Ushant. As you approach the latter island the soundings do certainly decrease, though they will be found to vary a few fathoms more or less, viz., at the distance of sixteen leagues from the Ushant, and on the parallel of the island, you will find 72, 71, and 70 fathoms water, a sort of coarse pale yellow ground, resembling semi-indurated marl, with a mealy surface, interspersed with broken pieces of shells, and a substance like chaff. At the distance of nine leagues on the same parallel you will have from 66 to 63 fathoms, the ground of a similar description, and you will find 65 fathoms within three leagues of the rocks. In thick weather, therefore, do not come into less water, when approaching Ushant, than 70 fathoms, and keep the lead going. On the parallel of the Saintes the transition from deep to shoal water is very sudden; in latitude  $48^{\circ} 2'$ , and longitude  $8^{\circ} 4'$ , 396 fathoms were obtained, the bottom being dark bluish-gray mud exclusively; and only eight miles to the westward of this position 529 fathoms were found.

From a due consideration, therefore, of the foregoing materials, it will, I think, be manifest, that vessels bound into the British Channel from the south-westward should run well to the northward, when eastward of the meridian of  $10^{\circ}$ , until oaze forms part of the soundings; and that all vessels bound there from the north-westward should, for the same reason, borrow well to the southward, when eastward of that meridian, until the soundings are free from oaze; thus infallibly ensuring a safe parallel, in the first instance, whereon to run eastward: and as, during the prevalence of strong southerly and westerly winds, the tides are warped more astream than usual, and found to run considerably longer, as well as with greater velocity, between the north and west, than at other periods, I am induced to recommend, that when running from the edge of soundings towards the British Channel, upon the parallels of Ushant, Jersey, Trevose Head, or Cape Clear, during spring tides, and with the wind blowing strong from between south and west, the compass course should be taken at S.E. by E. (instead of, as usual, S.E. by E.  $\frac{1}{2}$  E., having in view the preservation of any particular parallel), and this notwithstanding the southing created by local attraction, which in this case will amount to one-fifth of a mile on every five miles of distance.

When running for the British Channel upon either of the above parallels ( $49^{\circ} 15'$  and  $49^{\circ} 25'$ ), or anywhere between them, if you find the water shoal to 68 and 66 fathoms, with soundings of fine sand, mixed with pieces of fragile white and yellow-ribbed shells, and very minute brown angular granite, and other stones of different shapes, unconnected with oaze, Scilly will bear from you nearly E.N.E., and be distant about 13 leagues: the depths for eight leagues farther eastward do not materially vary or decrease. On the parallel of  $49^{\circ} 25'$  you will find 65 and 60 fathoms, actually in the longitude of Scilly; and in the same longitude a depth of

67 fathoms, on the parallel of  $49^{\circ} 15'$ . Here, however, the soundings will be coarse sand, mixed with rotten rocky substances and flat shells, from whence your course to obtain a sight of the Lizard will be E.  $\frac{1}{2}$  S. and its distance thence will be 15 leagues. You will find 49 and 47 fathoms on the meridian of the Lizard, when 4 leagues from it, and 51 fathoms at the distance of 8 leagues therefrom. In running for this position on the before-mentioned course, the depths will shoalen pretty gradually, viz., 67, 63, 59, 56, 52, that is, 4 fathoms every three leagues; but the ground, after passing the meridian of Scilly from either of the above parallels, will change to a very pale whitish colour, (this is invariably the colour of the ground when to the southward of the fairway, instead of, as generally represented, reddish,) resembling that of semi-indurated marl, with a mealy surface, which peculiar quality will continue until as far eastward as the meridian of the Isle of Bas, and thus confirm your relative position in respect to Scilly and Ushant. The soundings on the meridian of the Lizard, in the depth of 51 fathoms, will be ground of a corresponding description, with a variety of broken shells. The soundings off the Lizard, upon and between the supposed radii of 7 and 5 leagues, in any direction between W.  $\frac{1}{2}$  S. and S. by E.  $\frac{1}{2}$  E., do not materially differ, the greatest variation therein being from 51 to 45 fathoms, from whence the depths gradually shoalen towards the point, within three miles of which are 40 fathoms water. The soundings at 5 and 4 miles south-eastward of the Lizard are 5 and 4 fathoms deeper, and the ground coarser, than those at similar distances south-westward and southward thereof.

THE END.















